Alignment bleaching and bonding

Dr Tif Qureshi looks at how alignment techniques have revolutionised the diagnostic order of priorities for patients in smile design cases

The rapidly evolving discipline of cosmetic and restorative dentistry is throwing up new challenges all the time. Our traditional approach of planning a final smile design outcome from the consultation has to be reviewed, because we need to appreciate that the patient's perception of their complaint or concern will change if they align or bleach their teeth first.

Often the patient's awareness of their unaesthetic smile is built on several factors that they might not fully appreciate at the outset. It is easy to lump colour, shape, surface anatomy and alignment into one problem and assume that there is therefore one solution.

Our beliefs of the principles of smile design often shortcuts the potential alternatives that are available, because many teachers in cosmetic dentistry have often told us that the 'patients don't really know what they want'. Therefore, follow the guide, get golden proportion correct, get the buccal width out, get the gingival heights symmetrical, get the embrasures progressive, get the line angles correct. There is nothing wrong with any of these suggestions. All together they produce a beautiful smile, but in the process of deciding to use ceramic veneers to change a smile and achieve all of this rapidly, there is not any option or time for a patient to look at these improvements in stages and see if those meet their expectations.

I speak from much experience. This has happened literally hundreds of times in my practice. Patients wanting a smile makeover, because of colour, alignment and tooth shape issues very quickly change their minds about using veneers once their teeth are aligned and whitened. As soon as line angles start to correct and light reflections balance out and become more symmetrical, it becomes very apparent that the incisal outline becomes the main visual focus. Now, I hope they wouldn't, but the very cynical might think, 'why would I want to talk the patient out of having a profitable treatment?'…

Well there are several very valid reasons. Firstly, it is the right thing to do. It might sound pious, but ultimately we are a service profession and although we need to run a business, we should treat our patients as we would want to be treated. Being offered every alternative and fully understanding what those options mean.

Secondly, it isn't less profitable, it happens to be more so. Using alignment techniques where simultaneous bleaching is possible, followed by simple non-invasive incisal edge bonding, a treatment can be completed with relatively little

Case 1

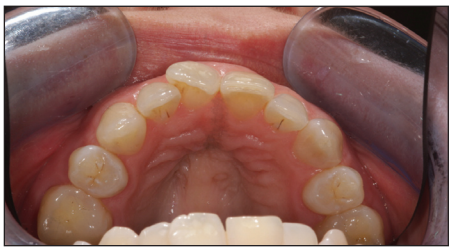

Figure 1: Before occlusal

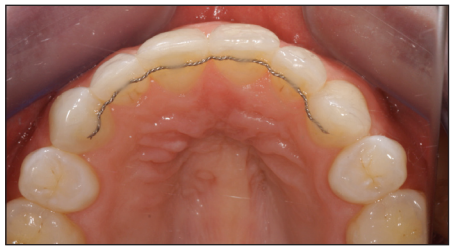

Figure 2: After occlusal

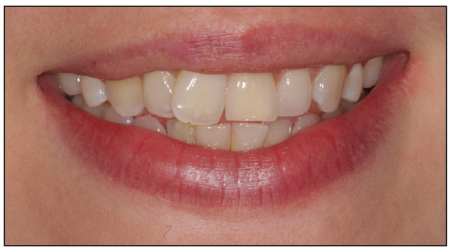

Figure 3: Before smile view

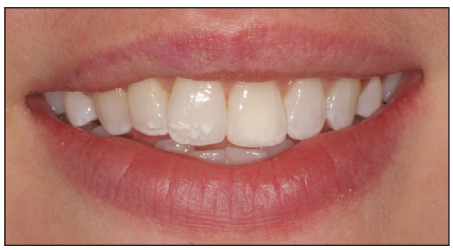

Figure 4: After alignment, bleaching and bonding

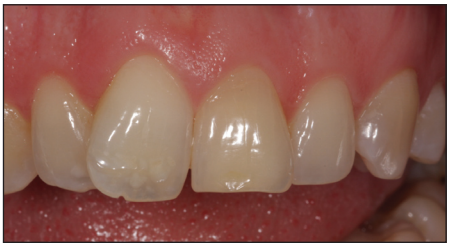

Figure 5: Before close view

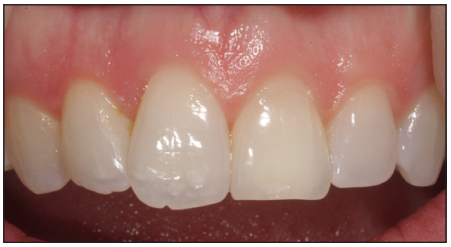

Figure 6:After 11 weeks with Inman Aligner and simultaneous bleaching - notice the irregular incisal outline

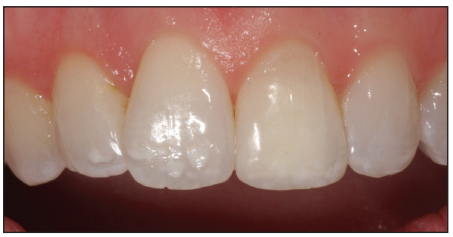

Figure 7: After incisal bonding - no preps

Tif Qureshi qualified from Kings College London in 1992. He is the 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 mimimally invasive cosmetic and restorative 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. He was the first dentist in the world to use the Aligner as a major tool for cosmetic dentistry. He has completed approaching 1000 cases using Inman Aligners as a stand alone treatment and to align teeth before cosmetic dentistry. Tif now lectures all around the world on the subject and has had many articles published. Tif is also a director of Straight-talk Seminars, the only official teaching body for Inman Aligners (www.straight-talks.com).

chair time and very low laboratory bills if you understand the processes.

Thirdly, this kind of treatment approach will generate a huge amount of referrals, because like it or not, dentistry still has a reputation for being all about money. Patients very much appreciate that you are clearly looking out for them and they all 'talk'.

Many dentists are now using aligning techniques. The power of using simple orthodontic devices is pretty clear. Whitening is also far more predictable and simpler with less sensitivity creating a barrier.

The final piece to the jigsaw is incisal composite bonding. After these treatments, bonding is often essential, simply because most adults with crooked teeth suffer from differential wear. Often this wear is not apparent at the start and it is easy for the eye not to pick it up when there are misalignment and colour issues.

It is vital that anyone performing any form of simple anterior orthodontics assesses tooth length at the start. Sometimes a simple measurement with digital callipers can reveal a 2-3mm discrepancy in tooth length, but because the teeth are misaligned, the edges look straight. The clinician has to appreciate that after the teeth are aligned, the incisal outlines might actually look worse. Therefore communicate and treatment plan this for the patient at the outset. Obviously a small degree of intrusion or extrusion may be possible, however I feel strongly that teeth should not be overly extruded and ground down, or overly intruded to match the incisal outline at the expense of correcting incisal and canine guidance.

Most of the time, teeth should be built up and the ideal material for this is composite. After alignment, this could not be simpler as it can be carried out with virtually no preparation, or LA required. If the teeth have been whitened, it is also easier to match the shade.

In the three following cases, will describe patients who presented wanting either smile makeovers or straighter teeth. Rather than rushing into smile design from the outset, our order of priorities focused on getting the alignment right first, then deciding on smile design. At the outset, we also educated them about their differences in tooth edge length and anatomy to ensure we met their expectations.

Case 1

This patient presented with what she described as a 'wonky smile'. She had looked into the possibility of having porcelain veneers placed previously so understood some of the aims of smile design. However on studying her teeth it was clear that there might be some potential to prealign first. Her upper right central was mesially rotated by about 30 degrees and her laterals were slightly in-standing and mesially inclined also.

She also had fairly stained teeth with the canines two shades darker than the centrals. On viewing the occlusal view, the patient became aware exactly how much aggressive tooth preparation would be required to place a veneer. She understood that she should have her teeth aligned first, before deciding on the next step in design.

Therefore, an Inman Aligner was used over the period of 11 weeks to de-rotate the front tooth and to tip out the laterals. At week eight of alignment, bleaching was started using 35-45 minute a day H_2O_2 gels. Simultaneous whitening is a very attractive part of aligner treatment, as it helps motivation no end. After alignment, the case was re-examined. The patient could suddenly see that her problem was now more about edge shape. The edge shape post alignment was actually worse because there had been differential wear. In fact the left central was 2.5mm shorter than the right. It was very clear to the patient that really only these incisal edges needed building.

For placement of the incisal edges at week 12, no LA was administered. No prep other than slight roughening of the worn incisal edges of the UL1 and 2. Tetric Hybrid composite was built up free hand on the incisal edge and palatal surface to match the outline of the other central. A small amount of white opaquer was dotted in to match and the facial surface was simply filled with nano-hybrid Venus for high polish. The composite was polished vertically using Rubber pogo sticks to try to blend in surface anatomy to mask the join. The process was repeated on the lateral.

The patient was held in retention using her aligner and an impression was taken for a wire retainer to be fitted two weeks later.

It was especially nice to retain the natural aesthetic characterisation of this patient. Ceramic work, as beautiful as it can be would certainly have changed her appearance more. Some may say for the better, but that was not what the patient actually wanted. She wanted her own teeth to look straighter, whiter and the correct length.

Case 2

This patient presented wanted eight porcelain veneers. She had been bothered by her smile for some time and had planned to have veneers based on what she had seen on makeover shows and from veneer cases previously done in my practice. Her set-up was typical of the kind of case that would be prepped with ideal smile design principles in mind.

Case 2

Figure 8: Before treatment

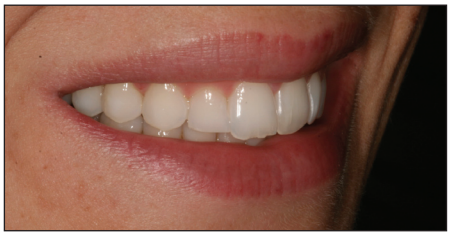

Figure 9: After alignment with Inman Aligner and some bleaching

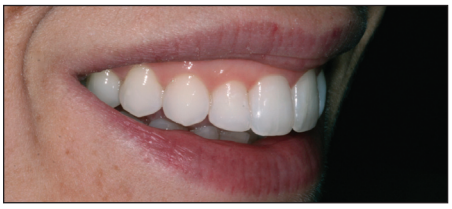

Figure 10: After incisal edge bonding.- total time 12 weeks, no prep.

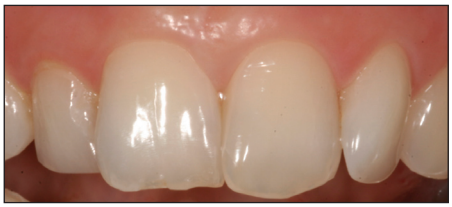

Figure 11: Close view before

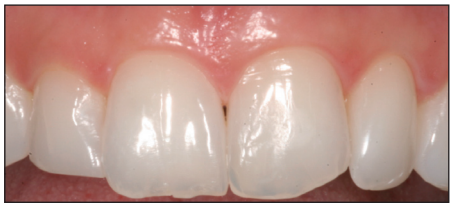

Figure 12: After Inman Aligner- notice the line angles/ light reflections improve. The problem is the outline.

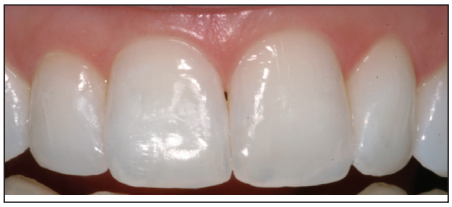

Figure 13: After no-prep edge bonding. Total time 12 weeks.

However I was fully aware how easily her mild crowding could be treated. I showed her an occlusal shot to explain how much tooth preparation would be required to ensure the veneers had good emergence profiles. It was clear that heavy preparations would be required on at least two teeth with one potentially needing root canal treatment. We suggested she considered aligning them first before placing veneers. An Inman Aligner was used over 11 weeks. Again whitening was started at week 8 and by week 11 the patient returned. The facial surfaces were now aligned, enamel was whiter and it was clear to her at this stage that the problem was now just the incisal outline. We discussed the pros and cons of bonding, and the patient decided to go ahead. No preparations, other than slight roughening of the enamel were performed. Tetric composite on the incisal and palatal surfaces were placed with Renamel microfill on the facial surfaces.

The patient told us that what we had produced with her own teeth, and some minimal composite was what she had envisaged and hoped for as a final result. There are natural imperfections and this case would not pass any criteria for cosmetic dentistry accreditations, but the route to this result was far more ethical and patient centric than a result that might have technically passed. It is an interesting case in that it asks the question - what is more important- Aesthetic perfection at the cost of heavy tooth preparation, or minor aesthetic imperfection that the patient loves with no invasion at all?

Case 3

This patient presented was concerned about her mild misalignment on her upper and lower anterior teeth. Her lowers were starting to derotate and her upper laterals were in-standing. The patient was completely unaware that the laterals were worn. But on measurement, it was clear that nearly 2mm of enamel and dentine had worn on both teeth. We knew that this meant after alignment, the incisal outline might actually look worse. The lower teeth were pretty much the same length with no significant or differential wear showing. The Inman Aligner straightened the upper teeth in 10 weeks and the lowers in 12 weeks.

Once the uppers were completed and whitened, simple composite edges were built up on the laterals with no preps and layered and polished as described in the previous cases. This case outlines the importance of picking up the irregular wear at the consultation stage. Doing this will allow the patient to plan these into the cost and avoid disappointment after the alignment phase.

Case 3

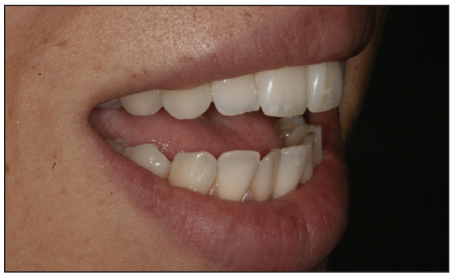

Figure 14: Before treatment, side smile view

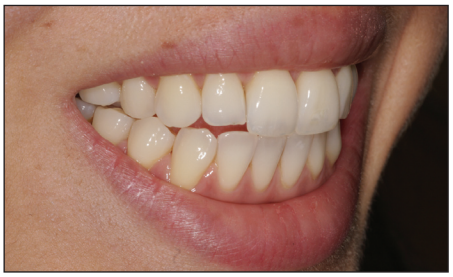

Figure 15 side smile view after Inman Aligners. Notice worn outline of lateral

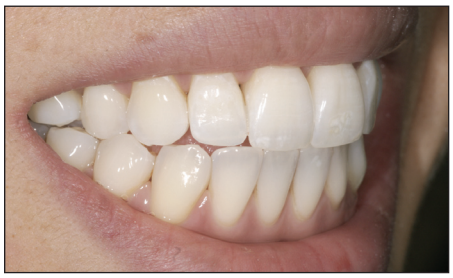

Figure 16: After no prep bonding and whitening

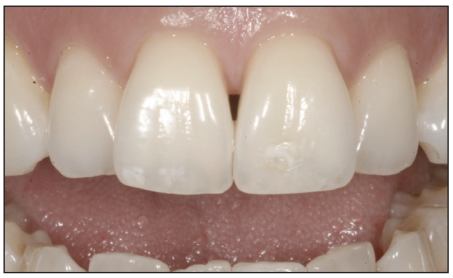

Figure 17: Before close view. Laterals wear not apparent

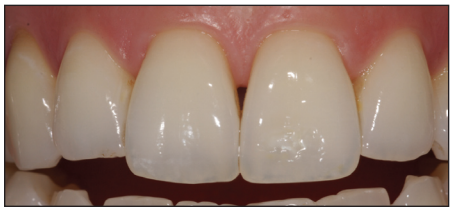

Figure 18: After Inman Aligner 10 weeks. Lateral wear now highly apparent

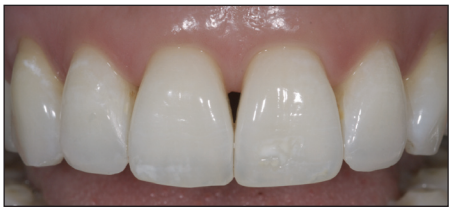

Figure 19: After whitening and incisal edge bonding

Conclusion

I believe alignment bleaching and bonding will become one of the most widespread disciplines in aesthetic dentistry. Claiming that bonding is too hard or unpredictable is no excuse to guide patients down the route of aggressive tooth preps and ceramics.

There will always be a place for ceramic work - when the enamel is eroded/pitted, or there are old restorations or in large wear cases. Ultimately many of these patients will need a ceramic solution later in life, but at least their teeth will be straight and the preps can be truly minimal. Our technicians in the UK are doing a fantastic job with materials such as ultra-thin Emax-HT.

Those who worry about composite breaking should stick to the basic rules of occlusion: be that you should protect your anterior and canine guidance. I also think anyone who exercises the Dahl principle puts themselves at a huge advantage to those who don't by simplifying potentially difficult dentistry and making it more accessible to all patients. I understand how controversial it might be to challenge the concept of smile design, but this change in the diagnostic order of priorities of smile design is vital if you are looking to give the patient what they actually want. Previously pre-whitening was always a way of giving our patients an alternative view of their teeth. Now and more significantly with alignment techniques, patients can make their own decisions and massively reduce the risks by breaking down the process of a smile makeover into stages and re-assessing at each point.

Now it is possible to align, whiten and incisal bond a case in less than 12 weeks, which previously might have had eight to ten veneers, four times the cost and significant tooth preparation, a dramatic contrast in pathways has been created.

If the patient is happy after alignment, whitening and then minimal bonding, then the final outcome is a massive victory. This specifically British-led technique is now a massive new treatment discipline in itself and cosmetic dentistry will be better for it. After all, what would you choose to have?

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