Interceptive and preventive dentistry

Tif Qureshi explains his 'pausative' dentistry concept and the importance of adopting a lifetime approach.

What does it mean to care for a patient over a lifetime? Are we, as dentists, treating a patient to make them happy and then saying goodbye, or should we provide that patient with a stable, functional outcome to last for many years?

By applying ortho-restorative principles to treat mild and moderate crowding cases, as well as improving appearance, we are potentially also carrying out interceptive functional treatment that can maintain a patient's long-term anterior guidance and a correct envelope of function.

The align, bleach and bond (ABB) approach provides the ability to reverse dental collapse and improve anterior guidance which, if left untreated, can lead to future problems. Align, bleach and bond is much more than aesthetic treatment. It is also functional and preventive and can change the way we approach all patients, not just cosmetic cases. Being able to carry out Dahl build-ups is also important. When the Dahl technique is understood, it can be one of the most powerful tools in dentistry.

Monitor, retain or treat?

I believe patients often agree to treatment when they do not really understand the functional advantages.

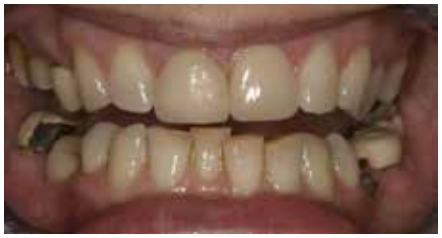

Fig 1 and 2. 2004: The patient at initial presentation had two discoloured upper central incisors.

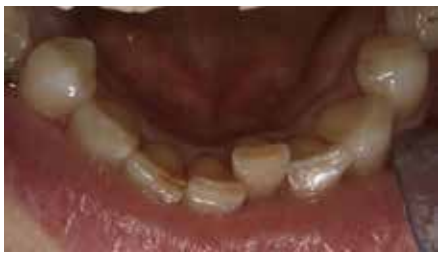

Fig 3. 2004:There was chipping and wear to the lower teeth and broken posterior bridgework.

Fig 4. 2004: The patient had reduced anterior guidance causing posterior interferences

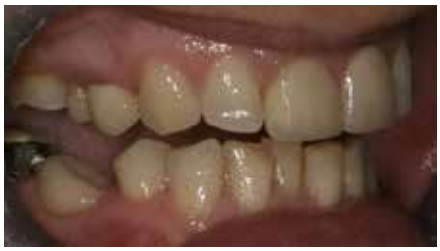

Fig 5. 2004: Reduced anterior guidance, right hand side

Fig 6. 2004: After alignment of the lower 3-3 teeth, direct edge-bonding with the Dahl principle was carried out

Fig 7 and 8. 2004: The two upper central units were replaced with a new ceramic crown and a veneer.

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Would it be more helpful if patients who decided to have aesthetic and cosmetic dentistry really understood the functional and potential lifetime benefits of those treatments?

Developing a long-term relationship and communicating with patients keeps them informed about what could happen to their teeth over time. Understanding the occlusal and functional effect of continued tooth movement, enables the patient to make an informed decision about intervention. I believe that it is crucial we talk to patients, present the facts and avoid rushing into treatment with➲

➲veneers and crowns.

It is important to explain the slow minor positional, functional changes and educate the patient about what is happening in their mouths. I record the amount of dentine exposure and look very carefully at enamel chipping. I always explain that dentine is six to eight times softer than enamel and that it will stain more heavily.

Taking regular photographs of the patient is also important, even if no treatment is provided. Each time a patient presents, we can look at the images together to see the changes over time. I don't think dentists are taught or conditioned to take photographs often enough. I will also undertake a regular fremitus check, demonstrating the pressure of fremitus and helping the patient understand what it means to have a constricted envelope of function. The key issue is that we explain that the change is gradual and progressive; we observe, we do not panic. We offer to monitor, retain or, of course, treat. Patients gain an appreciation that, over time, teeth keep moving, become more crowded, collide and discolour. The following case highlights the treatment of a patient over 17 years. With simple orthodontics, direct edge-bonding applied with the Dahl principle and a little maintenance, her teeth were prevented from becoming worse at a relatively low cost.

Case presentation

A 48-year-old female came to see me in 2004. The patient initially presented because she was unhappy with her two discoloured upper central incisors (figs 1 and 2). She also had chipping and wear to the lower teeth and broken posterior bridgework (fig 3). Her bite also felt uncomfortable.

On examination she had reduced anterior guidance causing posterior interferences and heavy contacts behind the upper central teeth (figs 4 and 5). The patient was keen to change the crown and veneer on the upper centrals. She also wanted to treat the wear on her lower teeth and the crowding.

Treatment options

Options discussed with the patient were comprehensive orthodontics versus a compromised plan. We also considered multiple upper and lower ceramic units versus alignment, bonding and replacing the two centrals.

Due to financial constraints and concern about the amount of tooth preparation needed, the patient chose simple anterior alignment with removable appliances. She opted for the Inman Aligner for alignment of the lower 3-3 teeth. Interproximal reduction (IPR) was carried out progressively over eight weeks. Once her lower teeth were aligned, an indirect wire retainer was bonded into place. This was followed with direct edge-bonding on the lower teeth with the Dahl principle, with primary contacts on the canines and light contacts on the incisors (fig 6). The occlusion was reviewed and readjusted about one month later to ensure any maximum intercuspation (MIP) and centric relation (CR) slide had been accounted for. The anterior➲

Fig 9. 2017: After 13 years the lower teeth are starting to wear.

Fig 10. 2017: The upper central incisor units are still in place but the lower right central is almost completely worn.

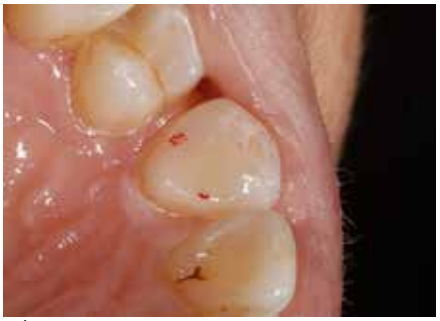

Fig 11 and 12. 2017: Palatal platforms were placed on the upper canines.

Fig 13. 2021: The patient decided to have the two upper central units replaced with a lithium disilicate crown/veneer

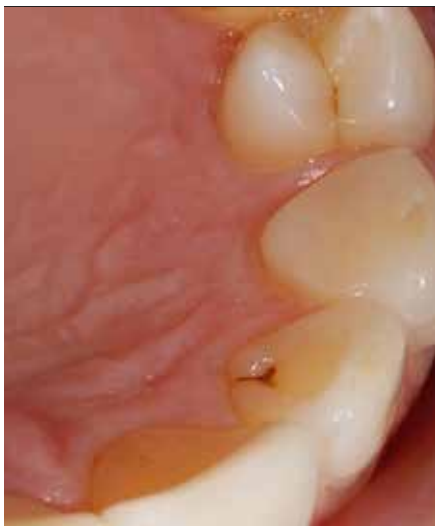

Fig 14 and 15. 2021: The upper palatal platforms are still functional and the repaired lower central incisal edge is still intact.

Fig 16. 2021: Alignment and direct edge-bonding with the Dahl principle.

contacts were readjusted and balanced at this point. The two upper central units were replaced with a new ceramic crown and a veneer (figs 7 and 8). The patient's bite settled over a two- to three-month period. The result was not perfect, but we were working within a limited budget. After about six years the posterior bridge units in the lower arch were replaced at the patient's own speed.

Cost-effective and attainable treatment

Figure 9 shows the patient 13 years later in 2017 when the lower teeth are starting to wear. The upper central incisor units are still in place but the lower right central is almost completely worn (fig 10). The patient didn't want to replace all the lower composite at this stage as she was more concerned about improving the appearance of the upper central teeth, one of which had developed a hairline fracture.

Budget was still an issue, so for the time being we agreed to re-Dahl the teeth. However, this time palatal platforms were placed on the upper canines. This was completed using Kulzer Venus Diamond nanohybrid composite in Opaque Medium (OM) shade (figs 11 and 12). The palatal platforms were placed freehand and a simple flat surface was created that reproduces similar but more basic anatomy than a natural cingulum. By placing a flat platform we could ensure correct axial loading.

The contacts were balanced and checked with articulating paper. These platforms then provided enough room to clean and rebuild the incisal edge of the lower right central without having to remove any of the other original composite placed in 2004. Venus Diamond Opaque Light (OL) and B1 shades were used to build up the lower tooth. A base shade of OL was placed and B1 applied over the top.

I like the strength offered by Venus Diamond. I have been using the material for more than 12 years and it has proved to be very fracture resistant. The composite offers easy handling, is predictable and adapts perfectly to the colour of the teeth. At this stage, if the patient's teeth had not been treated in 2004 there would have been further heavy wear on the dentine, probably one or two millimetres more tooth surface loss at a minimum, and increased crowding. A constricting envelope of function potentially would have caused one of the upper teeth to either break or push forward.

Strong, durable restorations

In 2021, the patient decided to have the two upper central units replaced with a lithium disilicate crown/veneer (fig 13). The upper palatal platforms created with Venus Diamond in 2017 are still functional and the repaired lower central incisal edge is still intact (figs 14 and 15). The original edge-bonding on the other lower teeth remains in place 17 years later.
To enhance the lower canines and incisors, the teeth were polished with the simple-to-use and predictable Kulzer Venus Supra polishing kit. However, it is likely that in the next two to three years they will all be replaced with Venus Diamond composite.

Interceptive dentistry

This case effectively demonstrates that the concept of 'pausative' dentistry can be aesthetic, functional and affordable. If this patient's teeth were left untreated from 2004, how would they look 17 years later? The lower crowding would likely get worse. The bite would probably deepen causing more surface loss, as there were already signs of dentine exposure. The already reduced posterior guidance would likely worsen and more posterior teeth could fail.

The 'pausative' approach with alignment and direct edge-bonding with the Dahl principle can help to minimise the amount of damage in long-term cases (fig 16). It can help prevent further tooth surface loss and tooth positional changes, and hold the occlusion in a much better position over time. For me, the interceptive concept is where dentistry really should be heading. Perhaps we should all be thinking more about intercepting and preventing obvious issues becoming predictable problems later on. Within this approach, the goal could really be total lifetime care.

References available on request.