Natural smile gives teen confidence

One patient is now favouring a dental career following composite treatment for microdontia. **DR PATRICK HOLMES**, the dentist who treated him, tells us more...

AESTHETIC treatment is frequently perceived as a frivolous aspect of dentistry. This case illustrates how it can be as important as any other branch. All that is required of the clinician is the appropriate knowledge of materials, an understanding of basic aesthetic guidelines and the desire to achieve a good result.

A fifteen-year-old boy attended the practice because he was exceptionally self-conscious about his teeth. He suffered from microdontia, but was otherwise fit and well. At his age, it needed to be taken into account that the periodontal tissues would probably not be fully matured. To add to the challenges, the patient had an edge-to-edge incisal relationship and a high lip line.

Arguably, the best results might be achieved with a laboratory-made solution, such as veneers or minimal preparation full coverage. However, the best interests of the patient had to be considered. Starting to prepare the teeth at such a young age, albeit minimally, would affect the long-term prognosis. What would the appearance be like, if the soft tissue matured to a more apical area?

I believed that a good result could be achieved using a direct build-up of composite. To help confirm this, and to manage the patient's expectations, a rudimentary mock-up was made. The patient was not concerned by his lower teeth. He was ecstatic about the projected results and happy to proceed.

Silicone impressions were first taken of the mock-up and then of the natural teeth, following removal of the composite. A shade prescription was prepared at this stage. There were no dramatic stains or crack lines. So, I concentrated on getting a perfect colour match.

I undertook all the laboratory work for this case myself. Preparing the wax-up helps the clinician to focus on which areas are the key to success or failure. From the occlusal view, it was clear how rotated several of the teeth were.

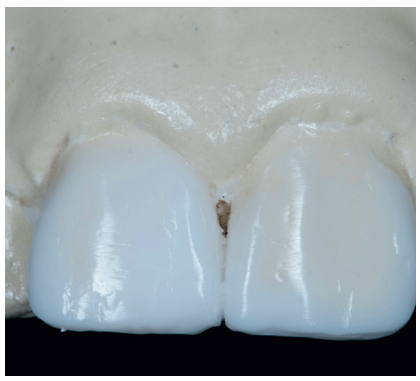
First things first

The two central incisors were waxed up first and a palatal matrix was made. This allowed the matrix to wrap more fully around the tooth, than if it was made after all the teeth had been waxed.

Most aesthetic dentists are aware of the palatal matrix technique to obtain the correct incisal edge position. In this case, I wanted to make changes to the buccal surface, so I decided to use a matrix as an aid. I also took a clear bite registration using Heraeus Memosil, covering the buccal surfaces. The composites can then be light-cured throughout the procedure and the treatment time is significantly reduced as finishing and polishing time is kept to a minimum.

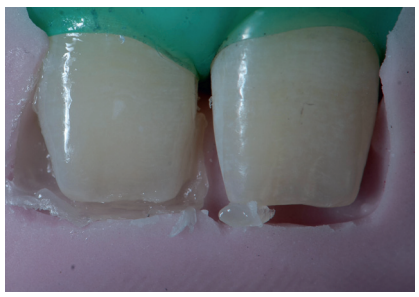
The canines were waxed up next and similar matrices were made. The process was repeated for the lateral teeth. In addition, prep guides were made to ensure the composites were not over-built. Excess material would prevent the final matrix from correctly determining the buccal surface.

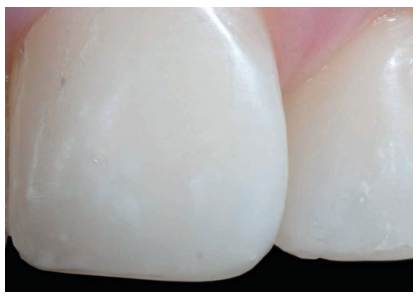
The teeth were isolated with rubber dam. Following etching and bonding, the palatal aspect of the upper right 1 (UR1) was built up with Heraeus Venus Pearl CL (Clear). The matrix helped, but in certain areas did not offer the necessary precision. Where any of the composite was too thick, or not smooth enough, it was trimmed back.

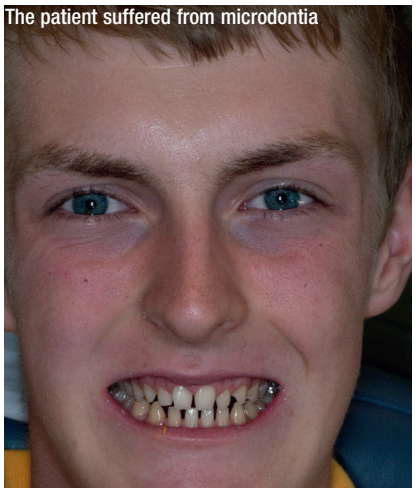


Above: the two central incisors were waxed up and a palatal matrix was made. Below: Following etching and bonding, the palatal aspect of the UR1 was built up with Heraeus Venus Pearl CL.

Above: the UR1 was isolated with PTFE tape, which enabled treatment of UL1 to commence. Below: two weeks later, excellent gingival condition could be seen. This was due in part to a fractionally supra-gingival finish, plus finishing and polishing under an operating microscope; also because the patient had pride in his teeth.







The patient suffered from microdontia

While it might seem unnecessary, this contributed greatly to obtaining the correct shape of the tooth, thus saving time later.

Trimming at this stage also helped control the value of the restoration. Too much of the enamel shade can result in a very grey effect. With many composites, the value can alter dramatically with the thickness of the enamel layer. Venus Pearl seems to be a lot less susceptible to this. From an aesthetic point of view, Venus Pearl gives a greater degree of latitude in cases where it can be difficult to be certain of the final contour of the tooth.

The core of the tooth was built up using the opaque dentine shade, OMC (Opaque Medium Chromatic). This was then covered with shade A2, utilising both the prep guides and the knowledge gained from performing the wax-up. Slight white clouds were incorporated, to mimic the natural teeth. Care was taken not to over-do these, which can happen if you try to match the dried-out adjacent teeth. This is why it is important to formulate the shade before the teeth have started to dry out.

Warmed Venus Pearl CL was then placed inside the transparent matrix, seated onto the tooth and light-cured. The excess composite material was removed by trimming with a #12 scalpel blade.

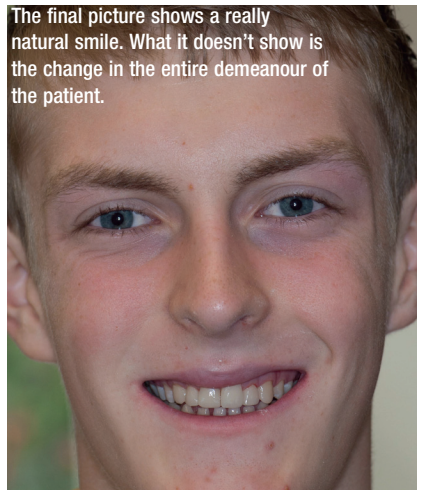
Restoration

Once the UR1 was completed, it was isolated with PTFE tape, which allowed treatment of the upper left 1 (UL1) to commence. The outline was built up with Venus Pearl CL, in a similar manner to the UR1, although it was no longer possible to wrap around mesially. An anatomically shaped, diastema-reducing, acetate strip was used to close the mesial space. The tooth was then built up with Venus Pearl OMC, A2 and CL enamel shades.

The canines were treated next, following in the order of the wax-up. They were the simplest teeth to deal with. At this stage, there was no distal contact to be created, given the manner of the space redistribution. Nor was there any mesial contact from the laterals.

Conversely, both laterals had mesial and distal contact. Therefore, the incisal shape was built up using the putty matrix. The mesial and distal layers were then formed with anatomical acetates. The transparent matrix was used to recreate the buccal contour.

Even before trimming and finishing, it was clear that the mesial and distal line angles had been translated from the wax-up. These were positioned closer towards the centre-line of the teeth than normal, in order to prevent them looking too wide. The successful transfer of detail was vital to this case. It was slightly fiddly to trim the composite flash, especially over six teeth. However, this was judged to be simpler overall than trying to recreate the contours accurately free-hand.



The final picture shows a really natural smile. What it doesn't show is the change in the entire demeanour of the patient.

As soon as the rubber dam was removed, the patient was shown the results. He was delighted. Finally, the occlusion was checked and the patient was discharged.

Two weeks later, at the review appointment, the excellent gingival condition could be seen. This was due in part to a fractionally supra-gingival finish, and to finishing and polishing under an operating microscope. It was also, perhaps as significantly, because the patient suddenly had pride in his teeth.

The final picture shows a really natural smile. What it doesn't show is the change in the entire demeanor of the patient.

Prior to treatment, he felt uncomfortable to smile showing his teeth and would avoid photographs. He explains his delight with the results: "I have felt much more confident when smiling and have no worries when having my picture taken. People at school, too, seemed impressed and have asked about how they could have something similar done."

This restoration required no invasive preparation, was biologically tolerated, serviceable and greatly appreciated by the patient. Could an aesthetic dentist or his patient ask for more?

When he returned for a routine examination, the patient explained that he had been so impressed with what could be achieved, he had decided to pursue a career in dentistry. ■

Reader enquiry: XXX

About the author

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