# Nightmare turns into MID triumph

**Kirk Young BDS(Dundee) and MFGDP (UK), Young Dental Practice in Snaith, East Yorkshire, highlights some of the key techniques associated with MID using a Clinical Case close to his heart.**

Lorna is a young lady who was in the process of completing her thesis and was also training as an elite athlete. She is an intelligent young lady, highly motivated and competitive. She has been a regular dental attender with no restorations and a very well maintained dentition. She had a collision with a cyclist and fell face down with the force splitting her upper lip and fracturing her upper central incisors (Fig 1). The result was that UR1 lost the incisal third horizontally and UL1 lost the distal third vertically, with the fracture reaching sub-gingivally. She attended her local A&E Department having the presence of mind to take the fractured tooth portions with her. Thankfully, the on-call A & E Specialist sutured her lip delicately and also re-positioned the tooth portions (correctly!) using a suitable, but unknown, bonding system.

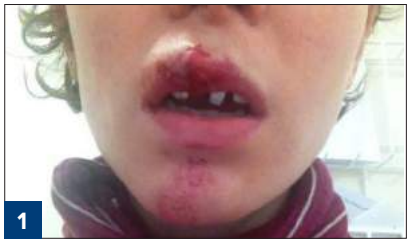

Fig. 1: Dental and facial trauma at presentation

Lorna was referred to the Teaching Hospital for vitality testing and further initial care. The UL1 subsequently required RCT, but the vitality of UR1 remained. These teeth were very unsightly (Figs. 2 and 3). She then had some layered composites placed until a more permanent solution could be found and agreed upon (Fig. 4).

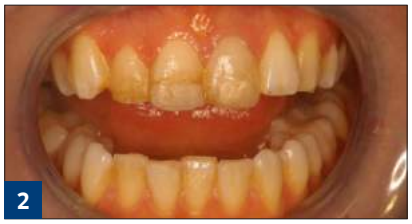

Fig. 2: Tooth portions repositioned at A&E

Whilst formulating this treatment plan it was decided to embark upon a course of Orthodontics for her lower anterior teeth, which had a minor degree of crowding. The Inman Aligner System was used. It should be noted at this time that the centre line of her teeth was not correct, even prior to this, but was acceptable to the patient (Fig. 5).

It was decided a minimally invasive approach must be taken and that veneers for UR1 and UL1 would be constructed with minimal preps and removal of tooth/composite. I was acutely aware that Lorna and her teeth had already suffered a great deal of trauma and I wanted to reduce further trauma to an absolute minimum. It was felt that a veneer would be constructed for UR2 to align this tooth with the other anteriors, as this tooth was slightly retroclined (Fig. 6). It was not suitable, nor safe, to start trying to move her anterior teeth so soon after her accident. My colleague, James Pegg, carried out the Orthodontics and was a great support during the course of the treatment.

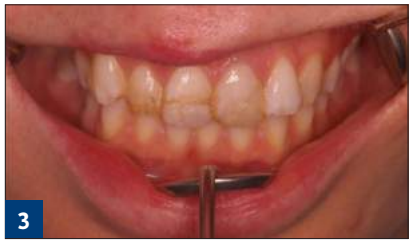

Fig. 3: Unsightly appearance of UR1 and UL1

## Planning and preparation

In preparing the teeth I had to use a certain amount of "guess work", as a lot of the existing tooth structure had been covered by the layered composite at the Teaching Hospital. This presented me with a problem in that I did not know the actual tooth morphology, which was now masked by composite. I especially did not want to weaken the tooth further by excess reduction of either it or the composite, as it is sometimes difficult to differentiate between the two (Fig. 7).

Fig. 4: Layered composites placed as an interim solution

Impressions were taken using the DMG Honigum impression material system and Premier Triple Trays. Whilst at this visit the minor flourosis was removed using the DMG Icon system. This proved to be invaluable as it aided with shade-taking, removing another obstacle for obtaining an acceptable aesthetic match and also improving the existing dentition. This was easily, quickly and readily performed.

It must be borne in mind that by leaving the UL2 untouched we might find that it would be difficult to achieve a completely successful aesthetic outcome. I did suggest to Lorna that we might look at providing a veneer for this tooth, as it was rotated and would be slightly shorter than her " new teeth", but she declined this at the time. I also considered placing composite on the medial edge which was also rejected.

The teeth were prepared with some incisal reduction on both centrals and very little interproximal removal. The UR2 was not prepared at all. Lorna visited the Technician, Mark Ambridge at Ambridge Ceramics, for shade-taking and to get a better "feel" for the job in hand.

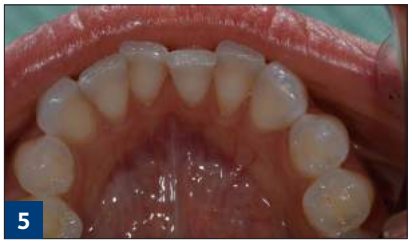

Fig. 5: Crowding present on lower anteriors

There was so little tooth removed that temporaries were neither required nor needed. Figure 8 and the photograph of the working models (Fig. 9) demonstrates how minimal the preps were. This would help Mark do a try-in without the need to remove temporaries, as Lorna travelled some distance to see him in his Laboratory. Also, it can often result in a small amount of tooth/composite being removed whilst removing the temporaries and trying to fit the restorations.

At all stages of the preparation liaison with Mark was essential.

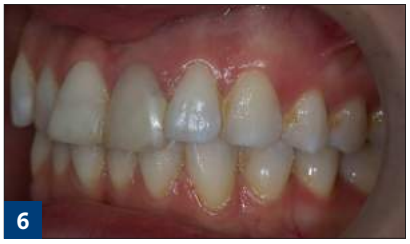

Fig. 6: The UR2, slightly retroclined

## Enhancing bond strength

A try-in stage prior to the final bake was arranged with Lorna attending the Laboratory. At this visit the appearance was very well received, with some minor physical adjustments and shade being made (Fig. 10).

Prior to fitting the veneers, I felt that the issue of reduced bond strength to existing composite should be addressed. I did not feel that I wanted to possibly remove even more tooth and weaken the teeth further. I was aware and concerned that by leaving in situ some of the composite on the damaged teeth we would suffer from decreased bond strength with the final restorations. I researched for a product that could enhance the bond strength of the bonding agent that I was to use with the veneers and thus "reclaim" some of the lost bond strength, which was compromised out of necessity. DMG have a product called Ecusit Composite Repair which has been proven to obtain high levels of bonding under these conditions. This product is very interesting in my view, as it could be most helpful in cases where a veneer has de-bonded and there may be some residual resin present on the tooth. Similarly, when repairing existing composite restorations and having to bond composite to composite. By using this without necessarily having to remove the resin on the tooth one can achieve a very high level of bond strength.

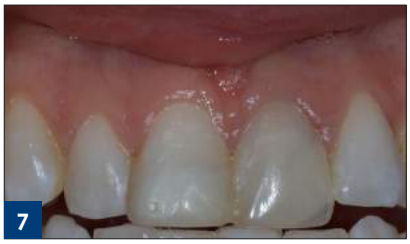

Fig. 7: The remaining tooth morphology was obscured by composite

The veneers were tried-in using the DMG Vitique Kit Try-in Paste prior to bonding and cementing. The DMG Luxabond was used initially and then the Ecusit Repair Kit to increase the bond between the luting cement and the layered composite.

For the luting cement we used DMG Vitique.

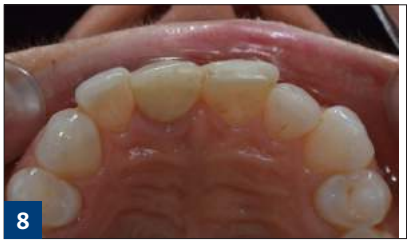

Fig. 8: Minimal preparation was carried out

## Eye for detail

The photos (Figs. 11 to 14) were taken just prior to final interproximal easing and polishing, as well as scaling and cleaning with Sylc from Denfotex. I had felt that I needed to take a fraction off the mesial of the Upper Right Central veneer, but Lorna felt very happy with it and did not want any removing. Similarly, I offered to look at the possibility of doing a minimal prep on the Upper Right Lateral, to align it a little better as it is a touch shorter. Again Lorna was happy to leave it and at present does not want that to be carried out.

Fig. 9: Working models demonstrating minimal preps

It is interesting that the photography really helped us with this case at all stages. For example, in Figure 11 I spotted a minute amount of luting cement on the distal of the UL1 which was missed by myself and James. Also, despite having had a scale and polish fairly recently, it is amazing how much detail of the staining close to the gingivae is highlighted by the close-up photographs.

The lowers responded very well to the Orthodontic treatment (Fig. 14). Lorna was provided with a dual-laminate retainer, which also doubled up as a night-guard. This was made by S4S.

I tried to maintain my MID principles as much as possible and the preps especially proved a challenge for both Mark and myself. Mark, I feel, achieved a fantastic result whilst keeping the restorations to a minimum with the shade-matching extremely well matched (Figs. 11, 12 and 13).

Fig. 10: The appearance of the restorations was well-received at try-in stage

In conclusion, I would just like to emphasise the importance of the following aspects of the treatment plan:

1. Minimal preparation on the damaged centrals and nothing on the UR2.
2. The removal of the fluorosis using DMG Icon.
3. The correction of the lower anterior crowding.
4. The use of DMG Composite Repair to allow composite on the teeth to bond with the cast ceramic restorations.
5. The use of intraoral photography and its aid with highlighting areas requiring further attention.

## Added pressure

This case was very complex as Lorna had the issue of completing her thesis just 9 months after her accident, so time was at a premium. Also, she was, as one would expect, very conscious of her appearance. I was very aware of the psychological damage that this must have had on her. The treatment period lasted just short 12 months.

Many thanks to Claire Lawson at Newcastle Dental School and James Pegg at Youngs Dental Practice for their help and assistance with this complex case and without their help I do not feel that we would have had such a successful outcome. Also, to the as yet unknown Max Fac Dentist who saw Lorna on the fateful night and sutured her lip up perfectly and also reattached the damaged tooth fragments.

And finally, the added pressure to achieve an acceptable outcome was the fact that Lorna is my daughter!

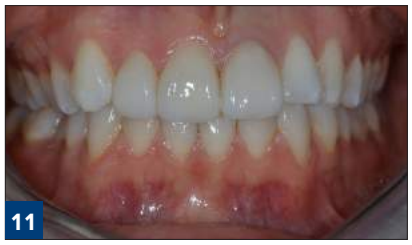


Fig. 11: Final result before polishing – patient was happy with the length of UR2 and refused additional treatment

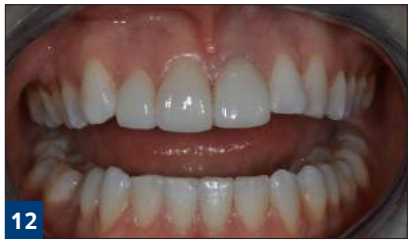


Fig. 12: Photography helped immeasurably, highlighting left over luting cement on the UL1

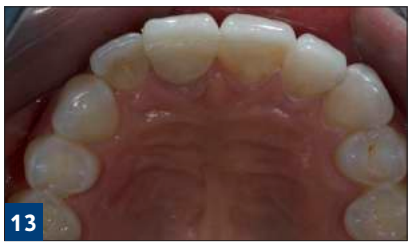


Fig. 13: A good shade match was achieved throughout

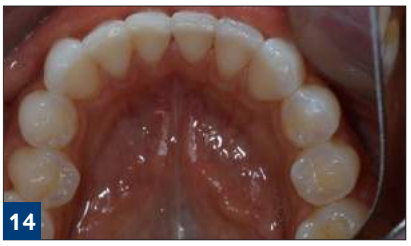


Fig. 14: Lower dentition showing a good response to orthodontic treatment

## Further informations

Kirk Young is a practicing General Dental Practitioner and Practice owner in Snaith, East Yorkshire. His Practice won the Preventative Practice of the Year Award in 2009 and was shortlisted for the Innovative Practice of the Year in 2010. They have recently been awarded Innovative Business of the Year 2014 for the Goole and Humber region. In addition, they have been awarded a Gold Award for the BDA Good Practice Scheme. Kirk runs courses on Minimally Invasive Dentistry and is very passionate and enthusiastic about this subject and dentistry in general. For further information visit www.youngsdentalpractice.co.uk or email kirkwood.young@virgin.net

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