

CLINICAL

Restoration case: a perfect smile for the bride

David Smith describes restoring a smile with multiple veneers and a single dentine-bonded crown

A female patient, new to the practice, in her early 40s attended for a consultation about the appearance of her upper teeth. She was preparing to get married and wanted a smile makeover.

On examination, I noted porcelain veneers on the UR3 and tooth UR2. The patient explained that these had been in place for approximately 25 years. Significant gingival recession had occurred, exposing the margins of the veneers that were also stained. The UR1 had a porcelain-bonded crown that did not match the surrounding teeth. In addition, the natural tooth enamel appeared mottled. The patient had some lower arch crowding, but was unconcerned by this.

Treatment options

Several treatment options were discussed with the patient, as well as doing nothing. They all included whitening the upper and lower teeth. But this alone would not achieve a satisfactory aesthetic outcome, without replacing the restorations. One alternative was to provide replacement porcelain veneers on the UR3 and UR2, along with a porcelain-bonded crown on the UR1.

The most comprehensive treatment plan would also include porcelain veneers for the UR4, UL1, UL2, UL3 and UL4. The UR1 would be restored with a dentine-bonded crown, to achieve a better aesthetic outcome.

The patient elected for the final option. She felt this would provide the aesthetic result she wanted, by creating greater uniformity in the appearance of her individual teeth. Increasing the buccal contour of teeth UR4 and UL4, to create harmony between teeth UR3 and UL3 and teeth UR6 and UL6, would give her a wider smile.

Crown lengthening procedures were declined, as the patient was happy to accept any minor gingival contour discrepancies. Potential treatment complications and the predicted restoration longevity were



Figure 1: A new female patient consulted regarding the appearance of her upper teeth

explained to her.

Initial treatment

At the next appointment, the patient was provided with basic periodontal treatment, oral hygiene instruction and diet advice. She was given trays and 16% carbamide peroxide to whiten her upper and lower teeth at home. A diagnostic wax-up was fabricated to visualise the proposed changes. A transparent polyethylene stent was constructed on a stone replica model of the wax-up.

Aesthetic, pre-evaluative temporary restorations were fabricated using the stent, which was filled with bis-acrylic composite and placed over the unprepared teeth. This allowed the patient to visualise

Figure 6: The patient had some lower arch crowding, but was unconcerned by this



Figure 9: An incisal overlap finish was created to allow maximum aesthetics in the incisal edge region and a positive seat for placement



Figure 2: Significant gingival recession had occurred, exposing the margins of the veneers that were also stained



Figure 4: Lateral view - right side



Figure 3: The UR1 had a porcelain-bonded crown that did not match the surrounding teeth



Figure 5: Lateral view - left side

the proposed changes intraorally. She was very happy with the appearance of these temporaries. Tooth whitening ceased a week prior to the planned preparation appointment, to allow full rehydration of the tooth structure and accurate shade assessment.

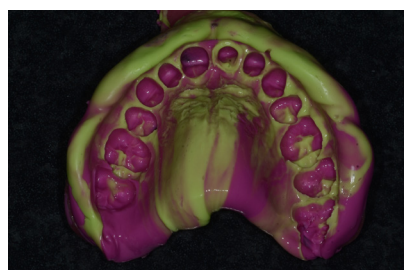
Preparation

The temporary fabrication process was repeated and the teeth were prepared through the material. This minimised the loss of tooth structure, as the temporaries resembled the exact contours of the final outcome. The interproximal regions were prepared through the contact points, sometimes called a 'slice preparation'. This allowed the technician freedom to adjust

Figure 7: A diagnostic wax-up was fabricated to visualise the proposed changes



Figure 10: Flexitime impression material was chosen due to its outstanding precision and highly accurate detail reproduction



the contour and position of the teeth. An incisal overlap finish was created, to allow maximum aesthetics in the incisal edge region and a positive seat for placement. Once the preparations were finished, the transparent stent was placed over the teeth to verify the correct depths.

An impression was taken in a special tray using Heraeus Kulzer Flexitime Monophase and Medium Flow. Flexitime impression material was chosen due to its outstanding precision and highly accurate detail reproduction. The Monophase was mixed automatically in the Dynamix Speed dispenser, creating a homogenous material. This was used in conjunction with the Medium Flow 'wash', to create a void-free impression. The process was well

Figure 8: A transparent polyethylene stent was constructed on a stone replica model of the wax-up



Figure 11: Temporary restorations were fabricated using the stent, allowing the patient to assess the proposed final outcome for a second time



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Figure 12a



Figure 12b

Figures 12a and 12b: A natural outcome

tolerated by the patient as Flexitime has a smooth texture, with a neutral taste and odour. It also has a favourable setting time and removal is pain free.

Temporaries were fabricated using the stent, allowing the patient to assess the proposed final outcome for a second time. The temporaries were then removed. The veneers and crown were tried in, individually at first, to check the marginal fit, then together to see their overall integration with each other. A sectional rubber dam is often used for isolation, but in this case moisture control was adequately achieved using retraction and cotton wool rolls.

The inside of the veneers and the crown were etched with 9% hydrofluoric acid and conditioned with a silane coupling agent. The isolated teeth were etched with 37% phosphoric acid. A bonding agent was applied but not polymerised. The units were bonded in pairs.

Teeth UR1 and UL1 were fitted first, using a luting composite resin. Then the UR2 and UR3 were fitted, followed by teeth UL2 and UL3. PTFE tape was used on adjacent teeth when bonding. The veneers were tacked by light curing for five seconds in the middle third.

Excess cement was removed at the margins and the interproximal contacts were cleansed using dental floss. The old composite restorations in tooth UL2 were replaced at this visit, to eliminate a potential bond failure in this region. The occlusion was then checked in intercuspal position and all excursions.

Laboratory work

I would like to thank Phil Reddington at Beaver Dental Technology for his superb technical support in this case. The veneers and dentine-bonded crown were fabricated with feldspathic porcelain on a refractory die. A silicone index was used to ensure that the fabricated veneers and crown were a dimensional replica of the diagnostic wax-up. The technician used his ability and artistry to integrate the shades, form, shape and texture.

Clinical outcome

Both the patient and I were delighted with the natural appearance achieved. This was our goal from the outset. The patient said she could not stop smiling and felt that it had transformed her physical appearance and confidence.



Figure 13: The patient said she could not stop smiling and felt that it had transformed her physical appearance and confidence

With meticulous planning and execution, in conjunction with excellent technical support, a predictable outcome had been achieved, resulting in a very happy bride. **D**