

Direct Veneers: The Clinical Technique



Geoffrey M. Knight takes the next step in our series on aesthetic techniques and describes a case requiring direct composite veneers. Geoffrey is a general dental practitioner in Victoria, Australia.

Previous articles in this series have looked at occlusal considerations, aesthetic landmarks and techniques for fabricating direct resin laminates. This paper incorporates these concepts and describes the clinical aspects of providing a patient with direct veneers.

Any discretionary procedure requires a dentist to give a full explanation of the proposed treatment and any alternatives, so that patients are able to make an informed decision with respect to their personal circumstances as to the benefits and limita-

quires working close to the limits of visual perception and such procedures are substantially aided by binocular magnifying loupes. The procedure is further assisted by fixed cheek retractors that keep the lips clear and facilitate access and moisture control. These retractors are used routinely by orthodontists and are available through many dental retailers.

Each practitioner's technique will differ in almost every dental procedure. This is usually without consequence provided that the outcomes are of an equal clinical standard. Whilst there are dentists who prefer to bond each tooth separately, the following technique incorporates a simultaneous bonding process that enables the clinician to work towards the completed case without having to fit a series of individual veneers into an overall smile.



Figure 1

tions of the treatment plan being prescribed. A major benefit of direct veneers is that tooth preparation is seldom required and thus the process is reversible if a patient's expectations are not met.

The following clinical example is of a young woman, unhappy with the small size and angulation of her teeth as well as the spaces between them. She had rejected an orthodontic solution and was adamant that no tooth structure be removed (Figure 1).

The technique as described, re-

Tooth Preparation

Preparation commenced by running a 12 fluted tungsten carbide bur over the labial surface of each tooth at the gingival margin and into the proximal



Figure 2



Figure 3



Figure 4



Figure 5



Figure 6

embrasures. This action removes the pellicle and prevents future marginal staining (Figure 2). The prepared tooth surfaces were then cleaned mechanically with a bristle brush and fluoride free prophylaxis paste (Figure 3).

Contamination of tooth surfaces with gingival exudate prior to any adhesive procedure is a significant cause of marginal staining. A technique described by Dr Graham Mount in his recent book, *An Atlas of Glass Ionomer Cements*, prescribes trichloroacetic acid to induce haemostasis at the gingival margins. This process arrests both bleeding and gingival exudate and reduces the sensitivity of the gingival tissues to marginal finishing. The resultant white deposit will usually have separated from the tissues by the completion of the clinical procedure with minimal inflammatory reaction. The acid should be applied sparingly by running a periodontal probe within the gingival crevices as shown in Figure 4.

The teeth were etched for 15 seconds with 37 per cent phosphoric acid gel, washed and dried with clean, oil free air (Figure 5).

A dentine bonding agent was brushed over the teeth at the cervical margins to assure adherence of the resin to any exposed root surfaces (Figure 6), following which an enamel bonding agent was painted over all prepared teeth and cured.

Resin selection and build up

Microfill resins are best suited for direct veneers as they polish to a high lustre that remains for long periods, unlike hybrid resins that soon lose their gloss. Small portions of microfill resin of a chosen cervical shade were placed onto the cervical third of each tooth, more thickly at the gingival interface and thinning to a knife edge towards the central section. The resin may be manipulated by a Ward's carver or similar instrument (Figure 7).

The technique of building a veneer does not require complete polymerisation during the layering process and



Figure 7



Figure 8



Figure 9



Figure 10

5 seconds of curing will suffice to maintain the resin in place before the next layer is applied. It must be remembered that each veneer then requires a further 20 seconds of curing prior to commencement of contouring. Dr. Garry Unterbrink of Ivoclar further suggests that the curing light should be activated about 8 cm from the resin surface and brought slowly towards the tooth to reduce the stress that occurs at the resin tooth interface when a composite is 'snap' cured.

The body shade resin was next placed after brushing a layer of bond over the surfaces to facilitate placement and reduce the chance of voids at the interface. Prior to curing this layer a number of small vertical indents were made on the surface with the carver blade (Figure 8). The layering technique is described in detail in *FDI Dental World* V2 No.1 January/February 1993.

A fine brush was used to paint tints into the indents (Figure 9). Whilst brown tints may be used, patients who desire aesthetic treatment of this kind usually expect the resultant tooth shade to be lighter than their natural dentition and may complain subsequently about any brown stains included in their veneers. However, white tints may be used to break up the monochromal nature of veneers without detracting from the lighter hue.

After painting a layer of enamel bond, an enamel shade resin was placed over the tints at the incisal thirds of the teeth. During the incremental layering of the veneers, it is usual for proximal spaces to become clogged with resin. There are discs available that can be used inter-proximally to separate the resin enabling placement of a mylar strip between the proximal surfaces (Figure 10).

Starting at the midline, a mylar strip was placed between the teeth and after painting on a layer of enamel bond, a small increment of enamel shade resin was placed inter-proximally. Prior to curing, the mylar strip was pulled about 2mm lingually to carry the resin through the inter-proxi-



Figure 11



Figure 12



Figure 13

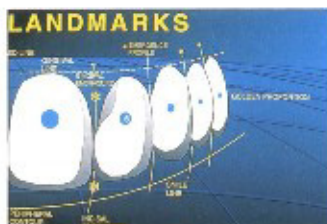


Figure 14

mal area and then wrapped around the facial and lingual surfaces (Figure 11). It is of particular importance at this stage to assure that the midline is correctly positioned as even a slight deviation will severely detract from the aesthetics of the finished case.

Contouring and shaping

When the resin layering had been completed each veneer was cured a further 20 seconds. Contouring was then commenced with a coarse emery disc for rapid bulk removal of excess resin (Figure 12).

Contouring the veneers requires attention to a number of aesthetic parameters that were described in detail in *FDI Dental World* V1 No.5 September/October 1992.

Removal of marginal overhangs are necessary for continuing gingival health. A 12 fluted tungsten carbide bur was used to remove resin flares at the cervical margins and both facial and lingual embrasures (Figure 13).

The following aspects require careful attention (Figure 14):

The Mid Line. This is the point of symmetry of a smile and incorrect placement will severely affect the aesthetics of the finished veneers.

The Smile Line. This is a hypothetical line that incorporates the edges of the incisors and the cusp tips of the canines and bicuspid teeth and should run parallel to the border of the lower lip when a patient is smiling.

The Gingival Line. A similarly hypothetical line drawn at a tangent to the apices of the cervical margins of incisor, canine and bicuspid teeth. It should run parallel to the smile line anteriorly, curving slightly upwards laterally and pass about 2mm above the cervical margins of the lateral incisors.

The Emergence Profile. Overall aesthetics are enhanced when the distal and facial profiles of veneers exhibit a similar and parallel emergence form.

Incisal and Gingival Embrasures. In order to rejuvenate a dentition it is



Figure 15



Figure 17



Figure 18



Figure 16

necessary to open the incisal embrasures and close the gingival embrasures by widening the cervical portions of the veneers.

The Golden Proportion. The ratio 1:1.618 has been utilised to enhance visual perception since the days of the Greek Parthenon. This relationship can be achieved by making the apparent width of each tooth diminish to about 60 per cent of its mesial counterpart.

Peripheral Contour. Rounding the peripheral contours of a veneer assists in giving a true three dimensional effect as well as aiding the development of correct mesial inclination.

Contouring was completed using flexible abrasive strips inter proximally (Figure 15) and small proximal Soflex discs (Figure 16).

The creation of perikyrtata was achieved by using a small high speed mounted stone, brushed up and down

in a vertical direction over each veneer (Figure 17).

Final adjustments and finishing

Polishing was achieved using mounted rubber wheels that, unlike abrasive discs, do not remove the surface contouring (Figure 18). Final polishing was carried out with extra fine Soflex discs. After final polishing each veneer was cured again for a further 20 seconds in order to achieve the maximum hardness on the outer surface of the veneer.

Recalling a patient one week after veneer placement gives a practitioner the opportunity to check that: there are no resin overhangs, the gingival tissues are healthy, there are no small air bubbles on the surface of the veneers and, most importantly, that the patient is satisfied with the result.

Further polishing of the veneers at this visit will enhance the quality and durability of the shine, increasing both fracture and stain resistance.

The recall visit also allows a practitioner to analyse the patient's occlusion to determine that there are no traumatic occlusal interferences that have inadvertently been built into the veneers, particularly at the physiological limits of mandibular movement. See *FDJ Dental World* V1 No.4 July/



Figure 19

August 1992

After 3 months, patients should be contacted by a staff member to confirm that there are no problems. A final recall visit is then scheduled for 6 months after veneer placement, by which time polymerisation of the composite resin will be complete and a final polish can be given. In addition, Veneer margins, gingival health and occlusion can be reviewed. Figure 19 shows the result of this case 6 months after veneer placement. Note the response of the gingival tissues and the lustre of the resin surfaces.

Direct Veneers are one of the many options dentists are able to offer their patients in the expanding field of aesthetic dentistry. The case illustrated here was particularly suitable for direct veneers as no tooth reduction was required and so the young woman will still be able to take full advantage of future technological developments in this field.