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Micro-hybrid Restoratives

Anterior - Posterior - Superior



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Advances in Dentistry and dental materials now allow us to offer our patients the beauty they desire coupled with the function we require.

In the past porcelain fused to metal (PFM) crowns were the best choice for the marriage of aesthetics and function, compromising on both aspects to achieve a predictable and acceptable result. With the advent of better porcelain and a greater understanding of design thereof onto tooth structure arrived the age of bonding. Unfortunately porcelain was treated similarly to the materials dentists were used to, consequentially resulting in extensive failure of the beautiful restorations. Many dentists lost faith in porcelain and returned to the old PFM crowns.

Certain guidelines now have been established that allow for predictable beautiful conservative porcelain restorations. Any restoration, but particularly porcelain veneers, require strict adherence to tooth preparation and design to allow for success. Breaking the design criteria into function and aesthetics, following is a tried and true method of achieving this.

Aesthetics

The purpose of a veneer is to re-align, re-shape or re-shade a tooth. All this needs to be done as conservatively as possible.

Several points must be considered when preparing a tooth for a veneer: Reduction, Margin placement and Shade.

Reduction

Traditional thinking has taught dentists to use a 0.5 mm depth cutting bur to allow for a uniform reduction of 0.5 mm. While this is an acceptable method of achieving a good universal reduction of 0.5 mm it is not a reliable method for achieving ideal aesthetics. What if the tooth is displaced labially 1 mm? If you use a 0.5 mm depth gauge for your veneer you still will be 0.5 mm out of alignment, and that is without adding the veneer. The reverse goes for a palatally displaced tooth, which often requires nearly no reduction labially at all. It is imperative to have the end result in mind. What are you trying to achieve with the case? It is very easy to remove excess tooth structure until the teeth are in somewhat of an ideal location prior to designing them for veneers.

A veneer should be a minimum of 0.5 mm in thickness, universally around the tooth except incisally, there 2 mm reduction is ideal if the edge is rolled over (many factors such as occlusion, concave/convex surfaces, etc. can alter this number). Cases where extensive

alteration in shade is required it is recommended to increase the thickness to 1 mm, otherwise the aesthetics are compromised to the point where a veneer no longer is the best choice of treatment. Margins on veneers need to blend into tooth structure. A smooth/polished chamfer works well. It is critical that the lab tech can define this margin very well. The exception to the chamfer is the incisal edge, where a 90° finish line to tooth structure is imperative. New research has shown that a 90° bend from the labial surface over the incisal edge ending at a 90° angle to the palatal tooth structure is most successful.

As with any porcelain preparation, no sharp internal line angles should exist. All sharp angles need to be rounded over to avoid internal fracture proliferation.

Margin Placement

Veneer margins should be placed so that they are aesthetically pleasing but also hygienic and structurally sound. If minimum reduction is achievable then the margins should be placed about 0.25 supragingivally. The margin should feather into the tooth structure and be "invisible". Interproximally margins need to be placed in a "gull wing" design, meaning they extend below the contact point into the embrasure in an effort to hide the margin. Contact points should be kept intact in conservative minor alterations, but broken in somewhat of a ¾ crown veneer design fashion for more dramatic aesthetic changes (or other pre-existing conditions such as caries).

If altering the tissue contours or a strong shade change is required, then the margin needs to be placed subgingivally, as minor as possible. It is important to avoid placing veneer margins onto anything other than enamel. Enamel/porcelain is by far the strongest bond and will resist staining and failure best.

Shade

As mentioned earlier, strong shade changes require thicker veneers (about 1 mm), and margin placements completely out of view (subgingivally).

Function

The beauty of a veneer is quickly lost through fracture if it was not designed correctly. To achieve proper function veneers need to have a minimum thickness, proper bonding and proper preparation design. Parafunctional habits such as bruxism must be controlled

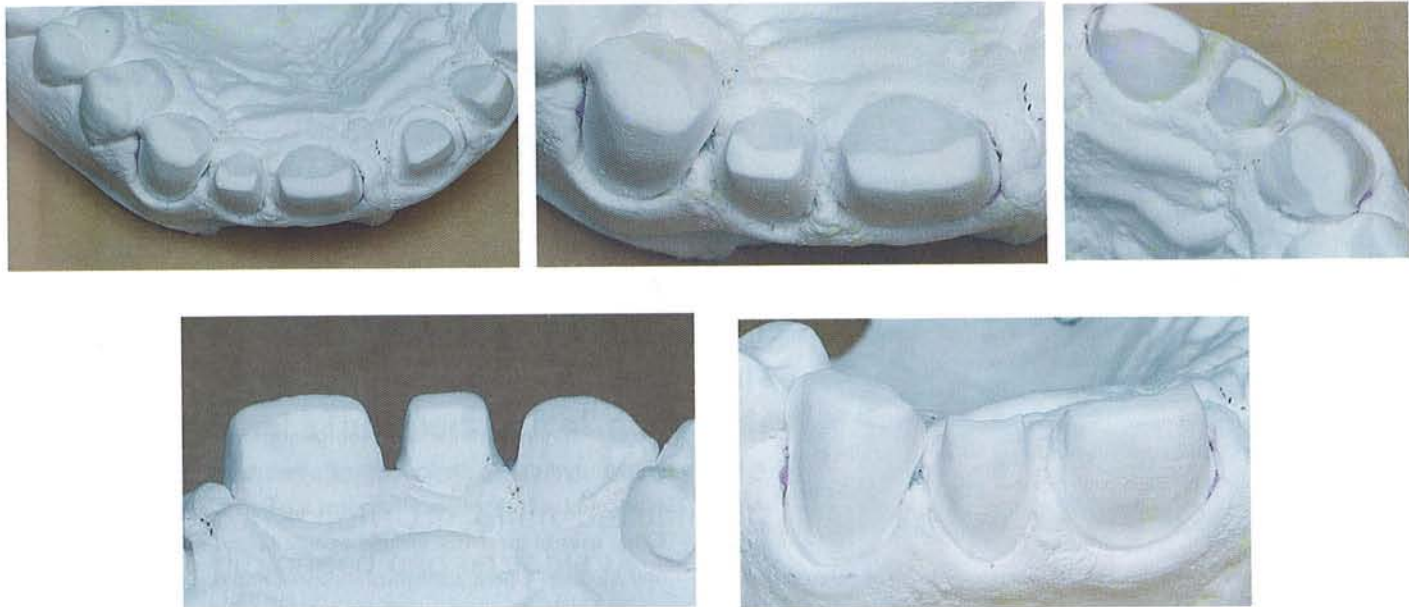
through proper canine-rise and a nightguard. Limitations of the materials must be followed, especially when it comes to the amount and location of unsupported porcelain.

If the occlusion is controlled and the veneers are designed to the above specifications, then predictable results are easy to achieve. Most failures seem to occur when dentists ignore the warning signs of the mouth, such as excessive grinding.

References
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Pre - Operative



Models showing clear margins and reduction.



Post Operative