

## Intermediate Restorative Techniques

### Denture Tooth Veneers Technique

Our challenge is how to proceed from the initial view on the left side of the page to the progress view on the right side. The patient is shown at age 11 and later (after initial orthodontics and denture tooth veneers) at age 17.



Interdisciplinary treatment plans which require orthodontic movements of teeth with gross discrepancies in morphology (or which involve multiple missing teeth) present the team with potential problems. Whereas there may be inadequate space to properly restore the teeth initially, the restorative dentist has the means to provide the treating orthodontist with a very close representation of ideal tooth form *during* orthodontic treatment. Often overlooked is the difficulty that orthodontists face when trying to establish and maintain ideal spacing and coupling when teeth are too small or missing (such as the present case) or when lingual tooth structure is severely eroded. Once initial positioning has provided adequate room for restoration, the restorative dentist may employ this technique using denture tooth veneers to communicate, *three-dimensionally*, the proper shapes of the anterior teeth before final orthodontic finishing.

It is designed to minimize chair time and thereby reduce costs to the patient. The veneers can be altered easily as final tooth movements are performed. This helps the orthodontist establish proper anterior coupling and incisal edge placement within the framework of the smile. Once orthodontic brackets are removed, ideal conservative preparations for porcelain veneers as final restorations can be performed.



Age 11



Age 17 with denture tooth veneers  
in place (2 weeks post bracket removal)



Fig. 1 Leveling and aligning



Fig. 2 Denture tooth veneers on model



Fig. 3 Putty silicone matrix

In the above case a 15 year old patient presented with multiple missing permanent teeth in addition to small existing incisors. The treating orthodontist had performed initial leveling and aligning tooth movements to provide a closer representation of their expected final positions. Then the restorative dentist utilized a stone model to select and fit the denture tooth veneers in a “trial and error” approach by hollow-grinding the denture teeth. The goal at this time is to position the veneers as closely as possible to an ideal relationship with the long axes of the teeth and **not** to correct positioning errors restoratively. The restorative dentist may view a panoramic radiograph to aid in this step. Once the teeth are luted onto the model with block-out resin, a putty silicone matrix is made of the veneer positions. This will facilitate the accurate transfer of the veneers to the mouth (fig. 3,4).



Fig. 4 Matrix to aid transfer



Fig. 5 Bonding with warm composite



Fig.6 Veneers bonded

Prior to bonding, the interior surfaces of the acrylic denture tooth veneers should be conditioned by applying a coat of methyl methacrylate monomer (MMA) for approximately 3 minutes, followed by a coat of light-cured bonding resin.<sup>[1]</sup> This will enhance the bond of the composite to the denture tooth veneer. The teeth should be prepared slightly (as needed) to enable a more precise fit of the veneer. Usually this requires some reduction of the prominent line angles of the teeth. It is advantageous to use a **warmed** hybrid composite when luting the veneers into place.<sup>[2]</sup> This increases the flow properties of the composite. The teeth are etched and bonded in the same manner as porcelain veneers at this time. Finishing and polishing is accomplished in a similar manner as well. The orthodontist now may re-bracket and finish the case, establishing ideal tooth relationships. He also has the ability to reshape the veneers as necessary to create ideal relationships. Upon completion of orthodontics the veneers can be prepped for permanent porcelain veneers using ideal, conservative reduction techniques. The restorative dentist merely has to reproduce the shapes and incisal edge relationships of the denture tooth veneers in porcelain.

[1] Daronch M, Rueggeberg FA, Moss L, et al. Clinically relevant issues related to preheating composites. *J Esthet Restor Dent.* 2006; 18(6) 340-349.

[2] Papazoglou E, Vasilas A. Shear bond strengths for composite and autopolymerized acrylic resins bonded to acrylic resin denture teeth. *J Prost Dent.* 1999; 82(5):573-578.

## Matrix Technique



Fig.1 Lingual erosion (bulimia)



Fig. 2 Wax-up

The patient in fig. 1 exhibits severe acid erosion of the lingual surfaces of the anterior teeth due to the effects of bulimia. Also, there is incisal tooth structure loss from attrition. After initial orthodontic spacing and aligning of the teeth (note the improvement in arch form) an ideal wax-up was performed on a cast model (fig. 2). This information was then recorded in a clear vinyl polysiloxane matrix of the wax-up in order to aid in the transfer to the mouth. The matrix is then tried in the mouth to assure complete seating (fig.3). Vent holes should be placed in the linguo-incisal edges of the matrix (fig. 4) to allow easier seating and the composite should be warmed to increase the flow (fig. 5). It further helps to warm the matrix in a heating pad to extend flow time due to the rapid loss of heat from the composite material.



Fig. 3 PVS matrix



Fig. 4 Try-in (note vent holes)



Fig. 5 Calset warmer/heat pad



Fig. 6 Finished composites

In fig. 6 the completed composite buildups are shown and the wires have been replaced. During the finishing of the orthodontics the composites may be modified as needed to achieve ideal relationships and esthetics. Figure 7 shows the final orthodontic positions prior to bracket removal. Three years later the patient is satisfied with her cosmetic results and has decided to delay final restorative treatment indefinitely (fig.8). She wears a splint at night and is in a regular maintenance program.



Fig. 7 Orthodontic alignment



Fig. 8 Finished composites (3-years after)



Fig. 9 Finishing armamentarium



Fig. 10 Finishing burs and discs

**List of materials:**

- EpiteX Finishing Strips (GC America)
- Memosil II (Heraeus)
- VisionFlex diamondstrips-blue (Brasseler)
- Serrated Sawblade 9816 (Brasseler)
- Burs:
  - 012F diamond (Axis)
  - H48L.31-012 Finishing carbide (Brasseler)
  - H379-014 Finishing carbide (Axis)
  - H246-009 Finishing carbide (Axis)
- Sof-Lex XT discs-2382C, 2382M (3M)
- Jiffy Brush (Ultradent)
- Enhance & Pogo polishers (Caulk Dentsply)
- Flexi-Buff Polishing Disc (Cosmedent)
- Enamelize Polishing Paste (Cosmedent)
- Calset compule heater (AdDent)
- Platinum 85 (Zhermack) PVS Putty