

Radical Reconstruction of Class II Division II Patient with Splinted Veneers

By Dr. Joseph Pelerin

In the following case there was a tight time frame -- 40 year old male in the Merchant Marines due to leave in 5 weeks. As a teenager, the patient was treated with orthodontic treatment and the proper anterior angulation was established, however the lower jaw was never properly advanced and the retention was not in place and there was a relapse. Teeth 7 through 10 were tipped lingually and he was grinding and shortened them about 7mm. (Figure A)

Previously a removable functional appliance was constructed by my associate who does ortho, Dr. Ron Geb, but the patient did not wear this appliance. About 5 weeks prior to operative reconstruction, the instruction was to wear the appliance continually as much as possible, and we tightened the screws to move the lingually-inverted centrals and laterals at least until we got them in a vertical position. (Figure B)

He did this and once the teeth were brought out to a more vertical position, we took study models and began working with Glidewell Lab. I had previously discussed this case with the marketing manager at the CDS Midwinter Meeting and we came up with the radical plan to splint veneers or $\frac{3}{4}$ crowns, which is a more accurate description, and we splinted 6, 7, 8 and 9, 10, 11.

While the reduction is very minimal on the incisal, I wanted to bring the preps interproximally and open that up to get as much strength as I could interproximally and incisally so that when we bond these, we have some strength. From the study models sent to Glidewell, made a beautiful diagnostic wax-up and sent me back a polyvinyl putty shim of the wax-ups, and we were ready to start the preparations two weeks before the patient had to depart.

The preparations and impressions took about two hours. Anesthesia was very difficult and the patient was very nervous. No matter how much Septocaine and Mepivacaine I used, I could not get #6 anesthetized. Finally we used a dosage of nitrous oxide -- approximately 3.5 liters of nitrous to 6 liters oxygen. After about five minutes it made enough of a difference that we had adequate anesthesia to begin the preps. (Figure C)

Along with the diagnostic wax up and with the polyvinyl shim to help with the temporaries, Glidewell made a prep guide. Also, a mock prep model of what they would look like was provided as well. However, when I looked at the mock preps they were not exactly what I wanted. There was too much incisal reduction and not enough interproximal reduction. I used it as a guide but modified the preps to what I thought would give us our best strength and most retention. Since the teeth were still just vertical and needed to be brought buccally, I was able to keep most of the buccal enamel. I did very little incisal reduction but I wrapped it into the shoulder on the lingual interproximally. I opened it up more so all of those interproximal spaces were larger than normal veneers; this is where the veneers are going to be tied or splinted. This gave us a lot more strength and we were able to do minimal reduction as far as the enamel but end up with really a lot of strength. (Figure D)

After our ideal preps were completed, we did some etching and then I did sealing with Hemaseal & Cide disinfectant desensitizer which is very important on all of my preps. It has been great to eliminate sensitivity and disinfect but it also is a tremendous bond enhancer. After that the preps were sealed. Next, we took the polyvinyl impression and used a full arch tray. A combination of DMP Bonasil putty and wash was used to give us the detail we wanted. (Figure E) It records excellent detail and has great tear strength. We took records of protrusive left working and right working and included that with our centric impression and face bow and sent it all to the laboratory.

Next we went ahead with our temporaries. I used the polyvinyl shim that was made from the diagnostic wax up. (Figure F on reverse side of flyer.) Since the teeth were already sealed we had to use lubrication. If I didn't use lubrication the temps would bond on. I had plenty of interproximal and incisal retention and I did not want to have to cut them off. Silicone lubricant was used on the lower 2/3 of the prep from the gingival up to 3mm below the incisal.

I loaded the shim with the Luxatemp and pressed it down to full seating and let them set in place. When I'm done, typically I take a percussion instrument, tap these and they come right off. Once the silicone shim was removed, the Luxatemp made very beautiful temporaries. I trimmed very little flashing, adjusted the occlusion and we used the temporaries to guide us on what we wanted for the final restoration.



Figure A



Figure B



Figure C



Figure D



Figure E



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Already the temporaries were a huge difference from what the patient's pre-op condition was observed. The transformation made him look like a different person. I thought we could use another 1.5mm incisally, starting with the centrals, and then keep the laterals slightly off the plane and the cuspids being the same length as the centrals. But also I wanted a little more protrusive advancement incisally, so I instructed the lab to do that. I also instructed the lab that I wanted a mamelon undulation, horizontal light reflection grooves and incisal translucency. When I spoke with the gal in this department, I told her we were going to splint the veneers and she replied by stating that they don't splint veneers. I said it is not normally done, but speaking with Mike Cash in Chicago, the case was discussed already. I just don't see with the way that his occlusion is, how I'm going to pick up clearance on the lingual. If I reduce the whole lingual, I'm going to cut those teeth so much that I just really would be uncomfortable with it. We agreed that we can try this with the splinted veneers, that I would really call $\frac{3}{4}$ crowns, I think is going to be exceptional and these unique preps would give us strength and retention from relapse.

Also I felt a lot better that I didn't have to prep the lingual which would have made a lot more reduction. I didn't think we needed to do it. I know this was novel and has not been done much at all, but in some cases I will go a little radical if I think it's going to get a better treatment. During the approximate two weeks waiting for the final restorations, #11 veneer chipped on the temporary and I was able to correct it with the shim. Zero post-op sensitivity and a lot of compliments on what a difference it made for him with regard to his appearance.

When the case came back we had to go through the anesthesia process again due to the extreme nervousness of the patient. I used the hook slide crown remover to tap at the interproximal and they came off very easily. The gingival was in good condition, very little hemorrhage, so we were in good shape to go through the bonding process. To clean the preps I used a solution of EDTA and aluminum oxide on a micro brush. I would have liked to use microabrasion but I was concerned that we would have irritated the gingiva making the bond process more difficult. Next, I tried the splinted veneers, or $\frac{3}{4}$ crowns. We tried on the one unit 6, 7 and 8 and it went down uneventful. When I tried 9, 10 and 11, we had some parallel issues and path of insertion issues. This is a big concern with this type of case because these veneers are not the most solid things, especially when they are splinted. So we had to be really careful about bonding. We used a little green chalk spray on and I was able to spot the preps where I had interference and get these to seat. So now I had the 6, 7 and 8 as well as the 9, 10, and 11 seating nicely. I removed the splinted veneers. We cleaned our restorations and then placed Silane on these e.max $\frac{3}{4}$ crowns. (Figures G, H)

To go through the bonding process I used the solution of EDTA and aluminum oxide and micro brush again to clean, and rinsed that off. We went to our acid etch and after 15 seconds rinsed that as well. Now I used Hemaseal & Cide to disinfect, enhance bond strength and reduce micro leakage just as I would use it on all my restorations. Leave it slightly moist and then go to the two-step bonding process. Then use luting cement. Since our shading was correct, we went with a clear shade, not a dual-cure catalyst/base. The one component studies show no darkening of the shade as can be produced by the catalyst base method. We had everything in place, flossed in the central at 6 and 11 to remove some of the excess flashing and light cured them. Then I was able to remove any other flashing, check for occlusion, and we were very, very happy.

At first when I looked at them I questioned if I had gone too far from the temporaries because the temporaries were not as long or anteriorly angled. I was a little uncertain. The next day I had him back to review and recheck the bite. I looked at the case and thought if I just round the distal incisal centrals, and take the laterals slightly more off the plane of occlusion, it will be a very subtle difference that yields a much more natural look. As the before and after show, this is indeed a radical cosmetic makeover and the patient is thrilled. He has a new level of confidence and can notice the positive reaction of others who look at him. This is a tremendously gratifying case. I have wanted to do this for many years and never had the opportunity due to a geographic separation and other factors. The patient is, in fact, my son and my name sake, Joe. To be able to do this is fantastic for me. I feel like I just had to do this at some point and I'm glad that even with the time constriction we were able to make it happen with the help of Glidewell Lab. I couldn't be happier with the way this case turned out and he feels the same way. (Figure I)

Of course, if more time were available, orthodontic banding and bringing the teeth to the correct anterior placement would have been ideal. I didn't have this luxury however. Once we were through this first phase, in which we were able with orthodontic appliances and the cosmetic re-angling of the teeth with veneers for esthetics and retention now, the second phase will be opening of the vertical dimension and advancing the mandible. That will be the goal to bring this to conclusion.



Figure F



Figure G



Figure H



Figure I