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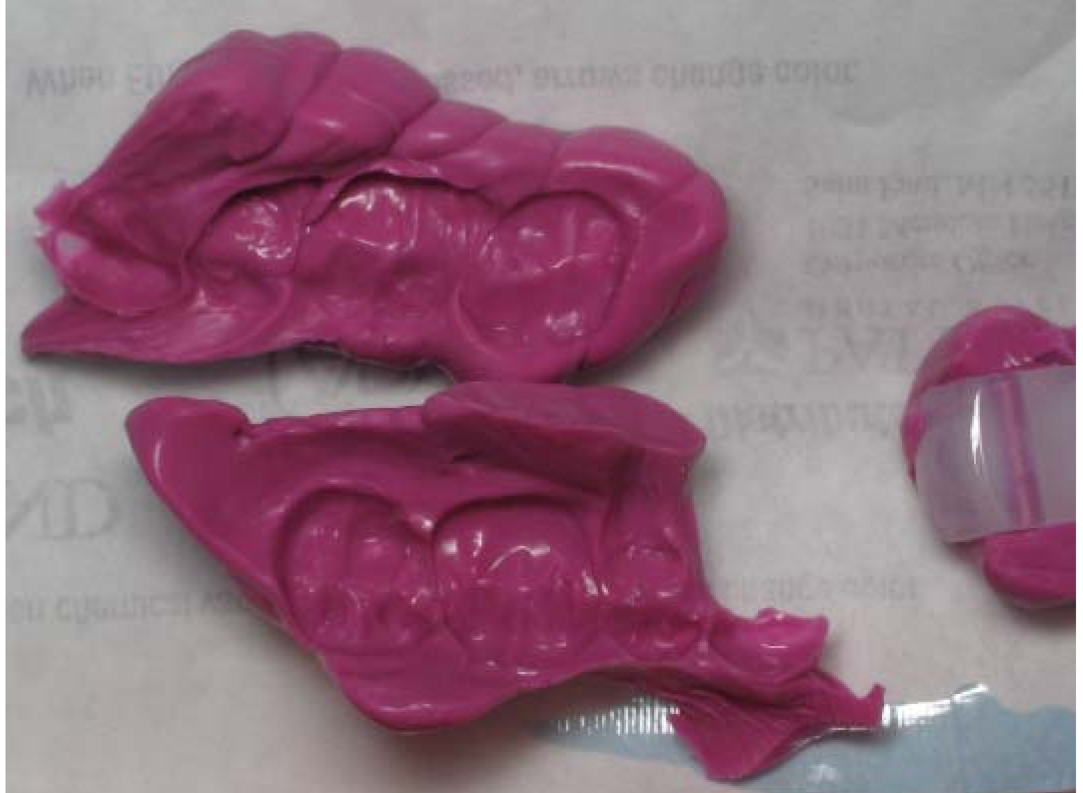
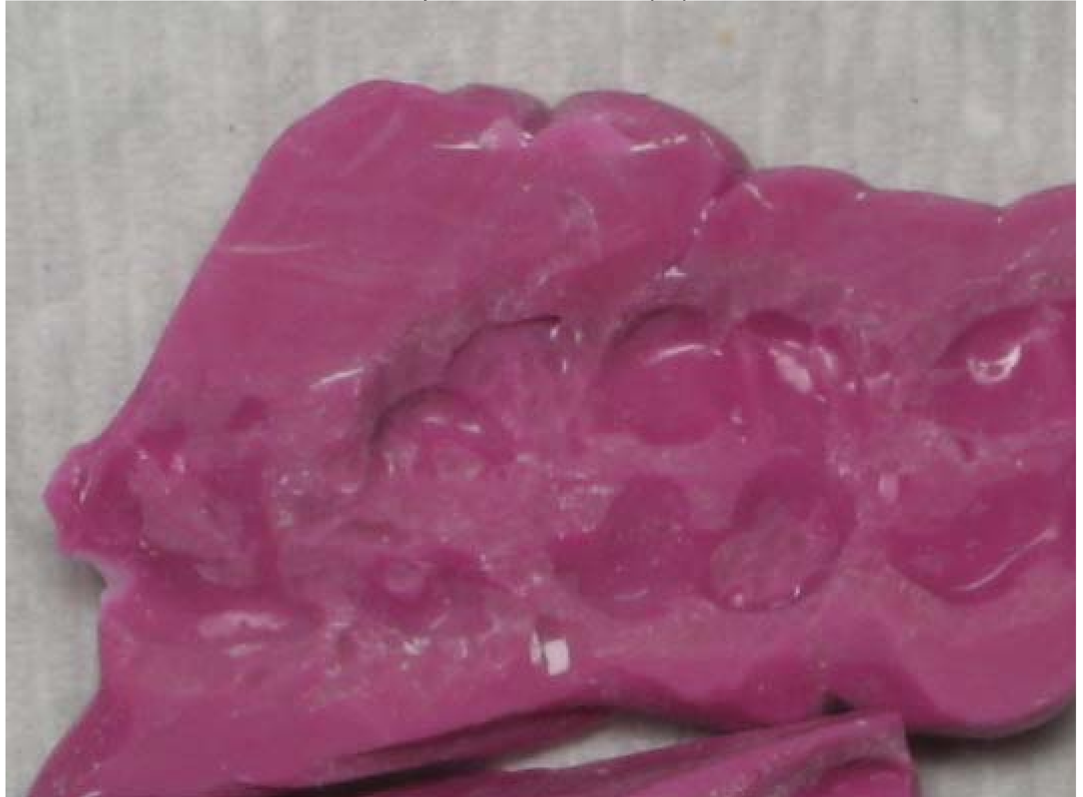
I used a lucia jig on this one that was lined with silicone to deprogram. I have the patient bite slide forward, slide back all the way, and squeeze. When I am going to take a final bite I do the following: 1) anterior deprogrammer is not removed 2) dry maxillary teeth 3) inject a hard bite registration. I use Futar-D. 4) Have patient bite forward 5) Patient slides back all the way 6) Patient Squeezes until material sets. Here is it.

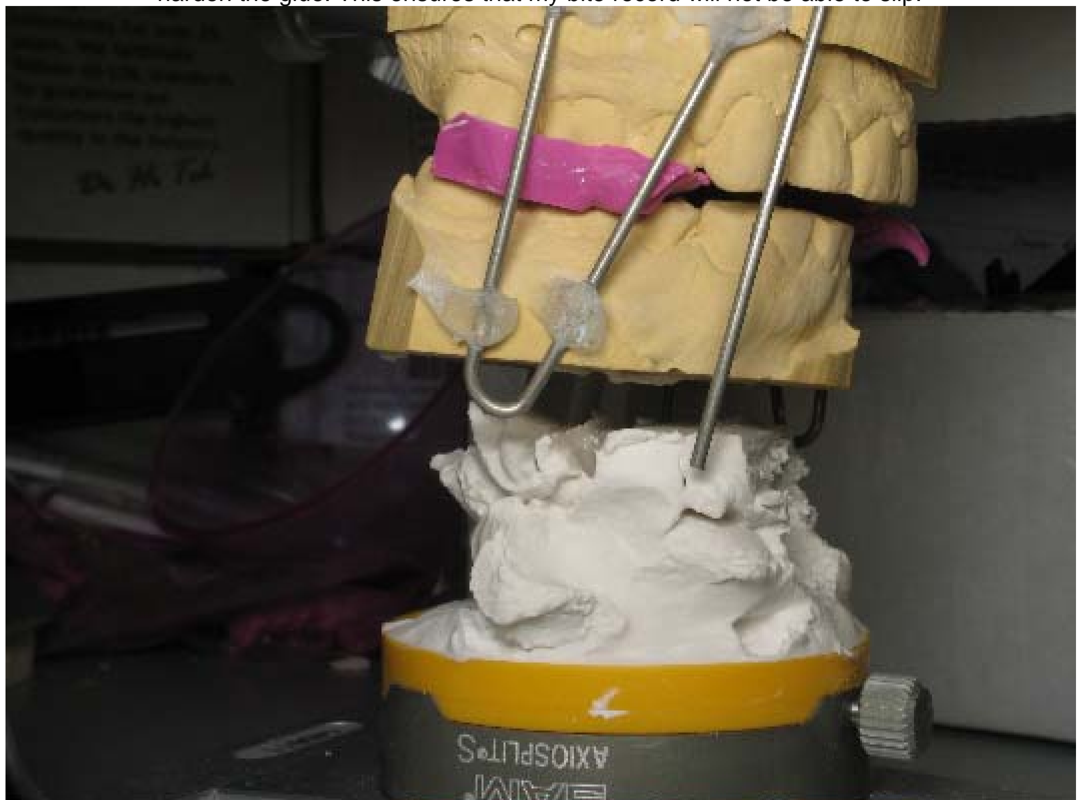


The bite record in silicone is much more accurate than your stone model and MUST be trimmed. It should not feel like the models have spring in the silicone. They should feel rock hard tight to the silicone. This is my trimmed bite record. Note all groves and marginal embrasure spaces are gone.

Ideally, all that is left is cusp tips.



Here is the mounting is process. I use a big supply of super glue and zip kicker to immediately harden the glue. This ensures that my bite record will not be able to slip.

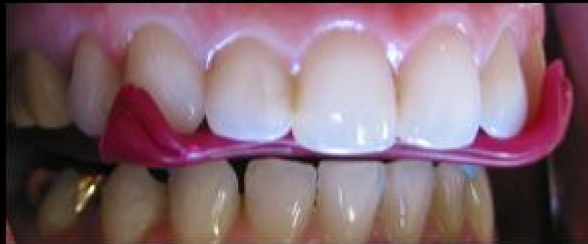


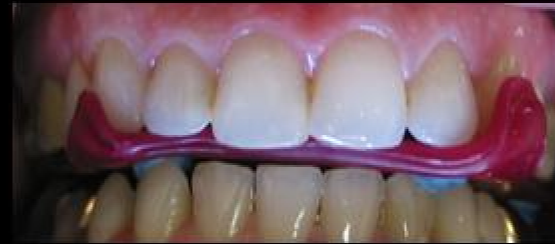
I did this mounting in two stages. The mounting stone will shrink and distort. Distortion could possibly affect my mounting if my stone is too big for one pour. While it is unlikely the distortion will affect models that are superglued together, I say why risk it.

2.

Schylers wax platform and delar wax buttons (as taught at Pankey)

Pankey/Schuyler's~Delar CR recording





For this method, the schyler's wax platform is trimmed and adapted to the maxillary arch. The edges are trimmed to or near the buccal cusps to visually verify seating. The corners are bent on the canines for retention. Extraorally, delar buttons are added and the platform brought to the mouth. The patient is then bimanually guided into CR and closed until the lower canines indent the wax. This is then aircooled. The recording can then be verified with manipulation and without. If this is correct, the posterior buttons are added extra-orally and then the platform reseated. The most posterior possible tooth is recorded in the second set of buttons and then air cooled and removed.

+'s
-Likely the most economical method from a materials standpoint.
-The red wax is not so accurate that it will prevent seating on the maxillary cast
-The delar can be re-melted or added to as needed
-stability of the record is excellent an interferences are minimized in the recording
-can be adapted to numerous arch forms, occlusions, overbites, jets, missing teeth situations...

minuses
-severals steps are required, including the use of a flame

-the brittle nature of the delar can lead to breakage of the record or delamination between layers
-archiving as well as mailing can be problematic due to warpage, breakage and science project growth
-cannot be load tested on
-multiple records can be quite time consuming
Delar wafer recording method (as taught at The Dawson Center)

Sorry-no pic, but this is a wafer of pure delar wax somewhat in the shape of the above wax. The wafer is preformed in a wedge shape so that the even indentation can be achieved from anterior to posterior.

Method

The method is similar to above. The wafer is former to the upper and then cooled. The side opposing the lower is then softened and the patient maipulated into CR and the wafer again cooled. This method works for Dr. Dawson so who am I to disagree...I hear good things about it but it does not work for me.

+'s

-Delar wax is not the cheepest wax, but it is still inexpensive
-While more accurate than schuylers wax, "over accuracies" that capture anatomy too well can be scalpel trimmed
-The delar can be re-melted or added to as needed
-stability of the record is excellent
-more resistant to fracture than the previous method
-can be adapted to numerous arch forms, occlusions, overbites, jets, missing teeth situations...
-can be load tested on...to a point

minuses

-the use of a flame
-to me, the wafer seems thick and bulky to deal with
-archiving as well as mailing can be problematic due to warpage, breakage and science project growth
-multiple records can be time consuming
-additional surfaces recorded can lead to an increase in seating interferences
-lack of intraoral stability without active stabilization (same for previous method. I missed that)

3.

The Leaf Gauge brought to you by Dr. Hart Long-still quite the character...This is one of Spear's preferred methods, I believe....

The leaf gauge can be used with active closure, passive manipulation or even active manipulation. The recording medium can be wax (such as the red wax wafer above) with an anterior window cut out or more current PVS or cartridge mixed bite registration materials. This is, I believe an evolution from using a cotton roll in the anterior, which the patient would bite on.

Methods

With the patient reclined, the leaf gauge is held in plcae and the patient rests~bites on the gauge. The minimum amount of leafs to provide posterior disclusion are used. The assistant may hold the gauge while the dentist uses manipulation or the dentist may hold the gauge, using thumb~chin pressure or the dentist or assistant may hold the gauge in place, without any manipulation and have the patient close onto the gauge. As with any of the methods, the seating of the condyle is the goal of the procedure prior to recording. The position is then recorded with bite registration material.

+'s

-time is money. the material cost is increased with pvs, but efficiency is also increased..IF using pvs rather than wax
-the use of an anterior midpoint stop device CAN decrease closing muscle activity to 30%

-depending on the method, the patient can self seat their condyles without posterior interference

minuses

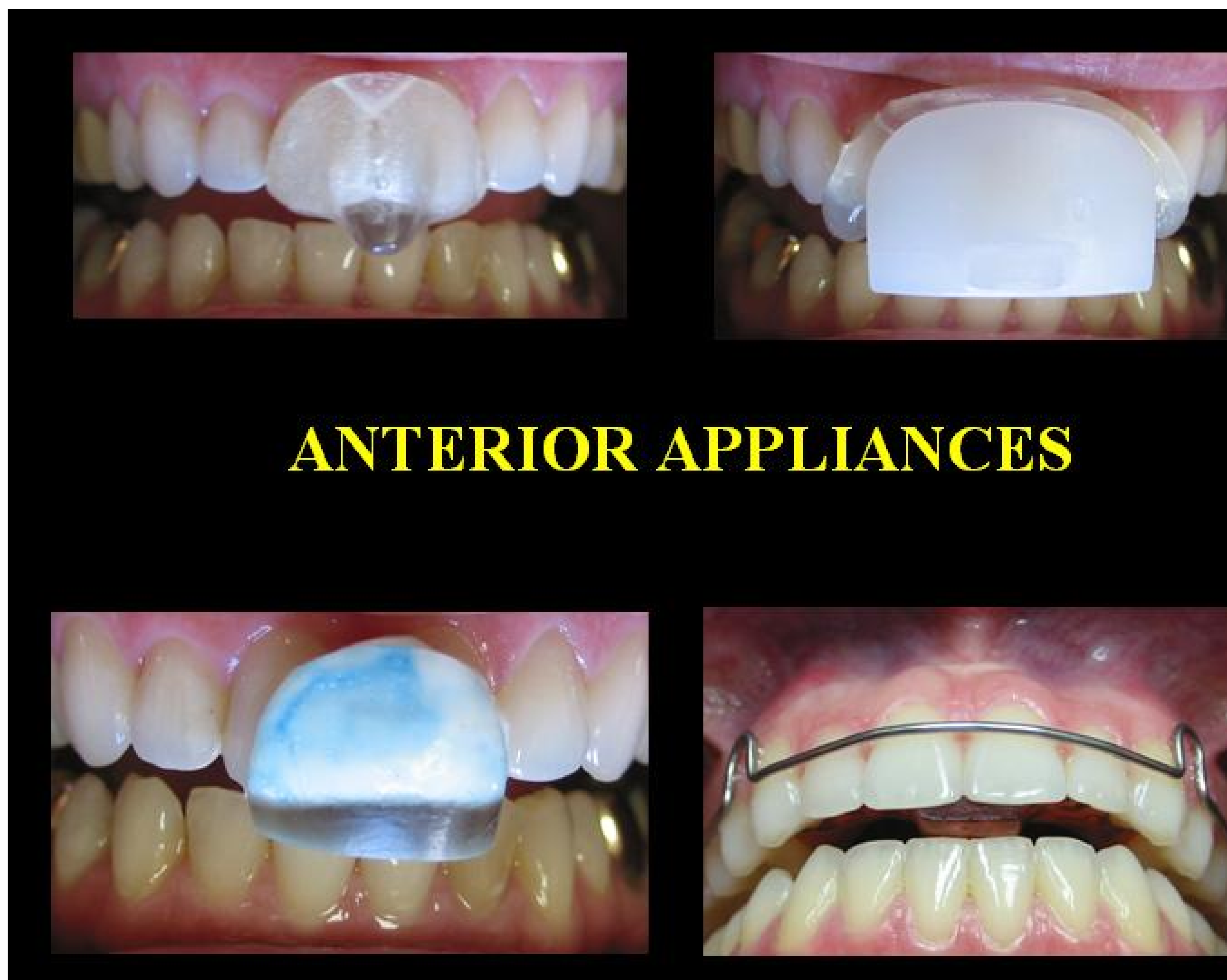
-there is no stability in the device unless achieved from bi-arch contact
-active closure, thus muscle activity is required with the instability which may include protrusive muscles
-deviation may be possible and not apparent due to the thin and flimsy nature of the gauge if few leaves are used

4.

Next, stepping into the present...as well as the past...the anterior deprogrammers...

These have been around forever and have had a great resurgence lately (is that redundant?)
DISCLAIMER-I am bringing these up from a bite registartion standpoint and not as theraputic devices so save that for one of the 10 million other threads on the subject .

The anterior deprogrammers or AMPSA's (anterior midpoint stop appliances) will include but not be limited to the fixed lucia jig (the blade jig would go up with the leaf gauge), Pankey deprogrammer, the NTI, Best Bite, Kois appliance, composite ball technique, etc ad naseum...

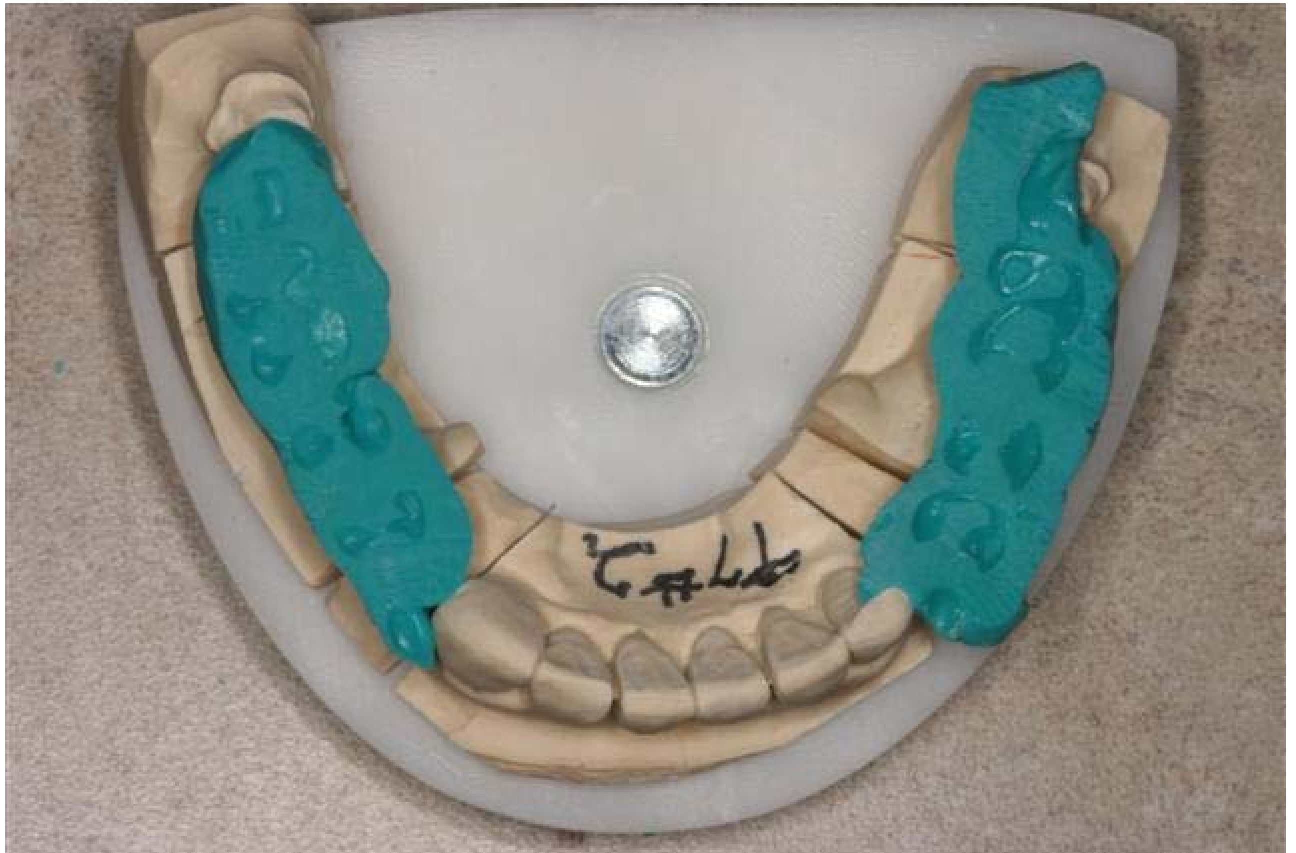


Using the AMPSA, the recording may be made with a wax platform with a window and registration material-heck, at Marquette, we used ZOE paste or the more current PVS use. The methodology for acheiving this record can vary greatly.

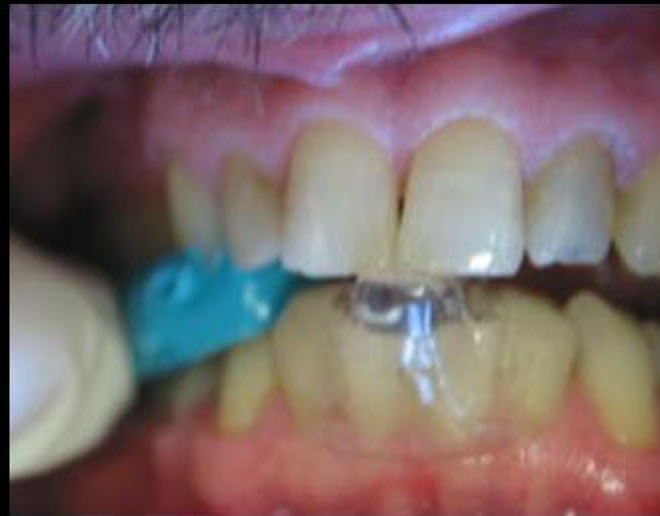
Futar is great. I like Megabite, which is also a great PVS type material. Regardless of the material, I like the registration material to either flex (not really) or fail before the stone model. TOO rigid of a material can be a probelm. Acrylic registrations can be very stable but can lead to chipped of models or even breakage.

To minimize breakage or flex and maximize, it is important to trim back the registration to cusp tip only registration. This can be done with a bur or blade. i prefer a sharp lab scalpel that can be used for bulk removal as well as removal of the fine detail that can prevent seating on the model. A bur has an advantage over the blade for some bulk removal but the fine control of a blade is very nice.

Here is a registration trimmed back for mounting...

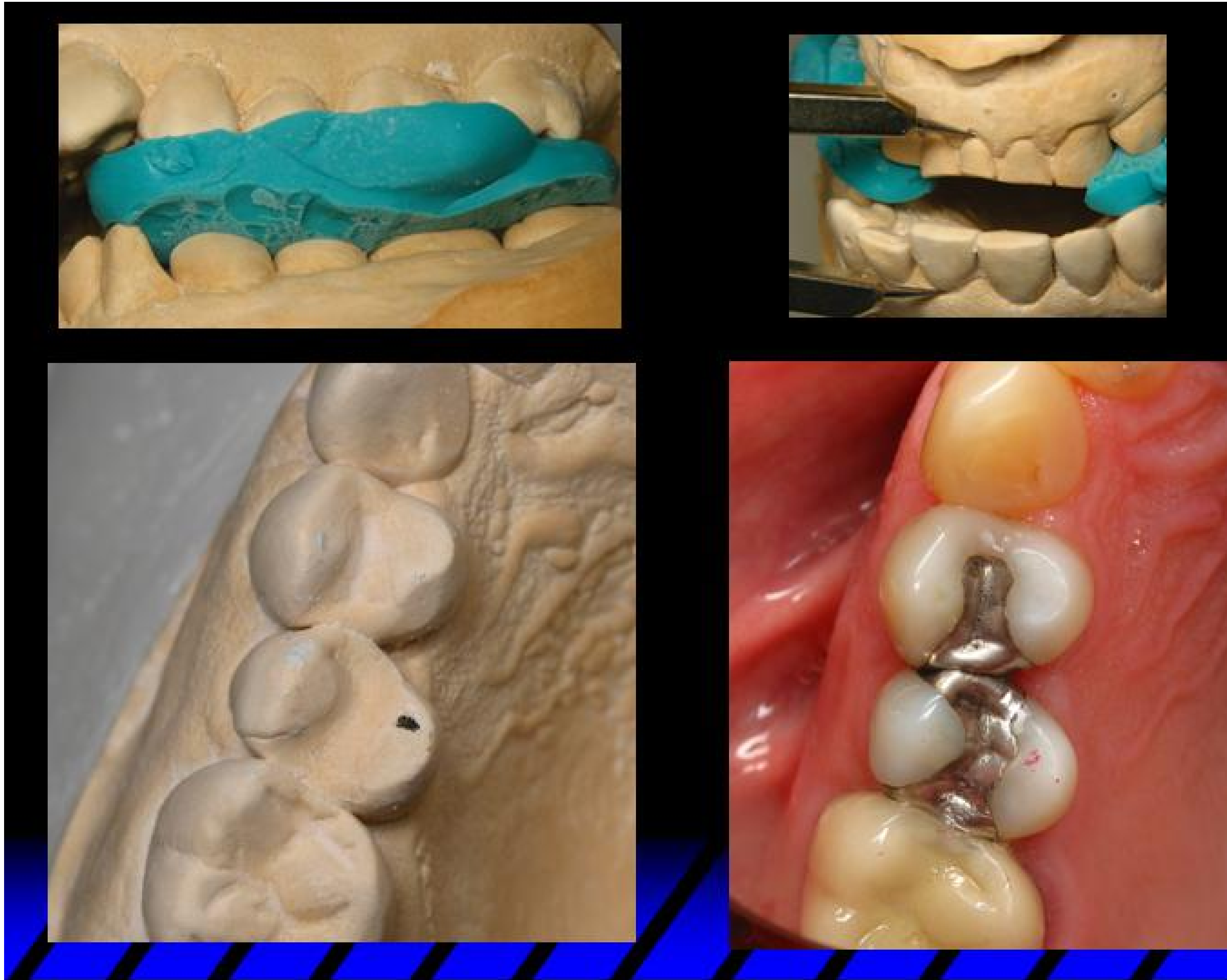


As far as bites go, I like taking 3. Along the old adage of "two is one and one is none." I have broke way too many registartions. having a back up is always nice. Using the segmental PVS registrations, these can alos be verified intraorally and even mixed and matched between the left and right side to make sure that all match.



I wish I could play video as that lower right shot shows unmanipulated confirmation of the bite record...

This is a different patient, but shows the mounting...



I do like to use photo confirmation of first contact. The tooth is not enough...WHERE on the tooth. What if the intraoral contact was on that distal marginal ridge but the mounted contact was on the lingual cusp tip....

This picture also shows a VERY opened vertical recording as dead accurate. Rotation CAN occur in CR for recording purposes. Whether the patient rotates, translates or a combo in reality is irrelevant for mounting.

5.

Active mainipulation, bimanual-still taught at Pankey and Dawson, PAC Live, etc...
Passive manipulation-the newer movement at Pankey and Dawson.
Power slide~clench-also taught at Spear
Gothic arch tracing duplication recording-traditional; variations used at PAC Live, Nuts and Bolts and I am sure loads of places...

Passive manipulation is what I call "along for the ride~ance." This was my progression in learning that really turned the light bulb on for me. I had experienced very heavy handed CR manipulators that I perceived as quite gifted but I found the technique difficult and felt that I was forcing the position and fighting the musculature. The the light bulb went off-listening to Dr Dawson's AUDIO tape on equilibration...I used his words and only tweaked it slightly-this occurs after proper deprogramming-which we assumed at the beginning of this thread. One the Pankey trainer, I found my manipulation force to be approximately .1-.2lbs during 'passive' manipulation. Of course, the trainer has no muscles so I was moving the mandible.

So-with my hands in the position of BMM (bimanual manipulation) but totally passive and non-directing..."Light as a feather landing on a cloud-you don't even want to break the surface-just until you feel the first tooth touch-close...and then raise your hand. Ok-just let your jaw fall open. Ok-can you show me that first touch again?..." This continues-the patient doing all the work. The first point is repeated, verified...and then when you are ready, just before the patient lets their jaw relax, the hands which have beeen in position the whole time go into action and PREVENT the patient from leaving the first contact. Even if they get a milimeter away, the manipulation distance is only 1mm without having to battle the LP's or digastrics through an arc. "Did I find the same contact that YOU did?" Active BMM can then be used for load testing etc...

+'s
-all of the benefits of BMM and...
-this method is a refinement of the time tested BMM
-eliminating the large arcing motion minimizes muscle influence
-the PATIENT is showing us the first contact, not being "pushed" or "put" there
-great bilateral stability for confirmation and recording

minuses
-may not work on all patients, some may stay in slight protrusive
-adapting voice control takes time to be a "CR whisperer"

6.

Active mainipulation, bimanual-still taught at Pankey and Dawson, PAC Live, etc...
Passive manipulation-the newer movement at Pankey and Dawson. Also at the Nuts & Bolts course...
Power slide~clench-also taught at Spear
Gothic arch tracing duplication recording-traditional; variations used at PAC Live, Nuts and Bolts and I am sure loads of places...

The power slide technique is very interesting and has some great advantages but also some very real pitfalls. The power slide technique involves using a leaf gauge or some sort of anterior midpoint stop appliance (ampsa) such as a lucia jig, NTI, Pankety deprogrammer, etc. The patient, biting down on the device slides forward and the slides as far as they can back. The position is then recorded with posterior registrations as previously discussed.

+'s
-This technique is EXTREMELY easy to teach and use (I even used it on my self and recorded an accurate 1st point of contact) and it does work well. That is only one plus but it is huge.

Minuses
-This technique essentially involves recordng the patient in a parafunctional act. With intensity and even resistance involved, deviation-even if slight, is a possibility
-Using the technique with a leaf gauge to record 1st contact may miss subtle fremitus first contacts.

I do not necissarily have a problem with this technique but I would strongly suggest backing it up with passive manipulation verification of the first contacty.

7.

Active mainipulation, bimanual-still taught at Pankey and Dawson, PAC Live, etc...
Passive manipulation-the newer movement at Pankey and Dawson. Also at the Nuts & Bolts course...
Power slide~clench-also taught at Spear
Gothic arch tracing duplication recording-traditional; variations used at PAC Live, Nuts and Bolts and I am sure loads of places...

The gothic arch technique is the least frequently used as it is the most material needs demanding. It is an excellent technique for denture fabrication. In a dentate environment, it can be midified to be used with an AMPSA either in a voluntary motion recording or with a 'reverse articulating paper recording' on the discluding element of the AMPSA. Either the voluntary range of motion or parafunctional range of motion is recorded. Without interference in the gothic arch or recording appliance, the most anterior mark on a lower appliance or the most posterior mark on a maxillary appliance should represent the most seated position. The patient is then positioned to this point and the inter~arch relationship recorded. The power slide technique is a variation of this technique without the labor intensive aspect of the traditional gothic arch recording. The AMPSA technique brings reduced nocturnal muscle activity and a true recording of the parafunctional range.

Here is an AMPSA~NTI in place with the reverse articulating paper marking the ROM as well as the most seated point of the condyle in pararfunction-in this case the most anterior point on the rubbed away marks.

+'s
-Can be extremely accurate and using the nocturnal variation, records the true ROM
-Can be used with any of the above technique for recording and confirmation

Minuses
-This technique essentially involves recordng the patient in a parafunctional act. With intensity and even resistance involved, deviation-even if slight, is a possibility. The nocturnal technique variation minimizes this.
-Additional material and time required

So with several of these techniques presented it is imporant to note that there is not a "right way"-each of these work alone an can work together as well. Some are for CR recording, some for 1st contact confirmation and some work for both. It is the rationale not the methodology that is important.