

Framework Try-In and altered
cast technique
April, 15, 2015

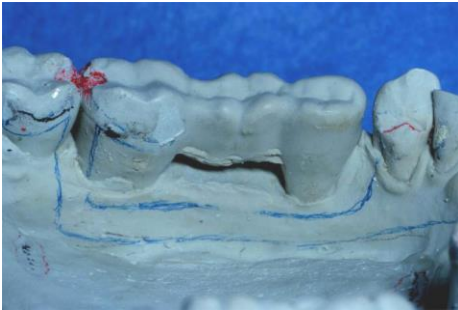
Partial Denture Framework
Adjustment

75% of RPD frameworks don't fit perfectly.

- Active clasps cause orthodontic movement and should be adjusted to be passive. Incomplete seating might also cause discomfort, damage soft tissues and supporting bone**
- Adjust soon after fabrication, without denture base**

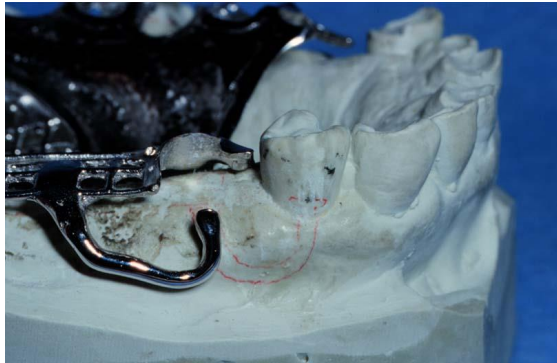
Preclinical Inspection

- Check accuracy of the framework as designed

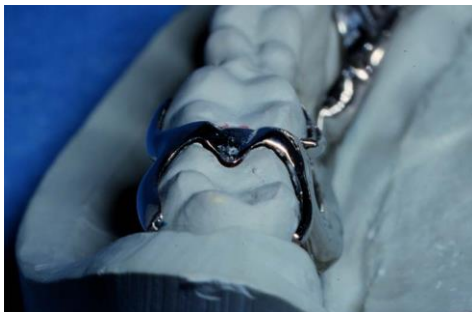


The design as drawn and then executed in the metal framework.

- **Framework should fit master cast. If it does not, probably will not fit intraorally**
- **Framework should cause no abrasion on the cast**



Rest seats should be fully seated

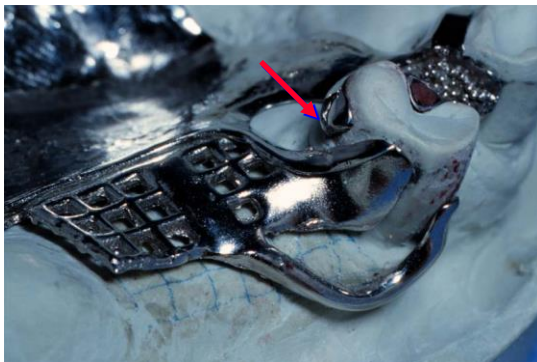


All retentive, reciprocal arms, proximal plates, superior portion of lingual plates and all maxillary major connectors should be contacting the casts (spaces will collect debris causing caries and gingival irritation).



Major & minor connectors:

- . **Should have adequate distance from abutments (hygiene)**
- . **Proper proportions (rigidity, hygiene)**
- . **Adjust or have lab adjust or remake framework**
- . **Minor Connectors should have butt joint finish lines slightly undercut for acrylic resin and also of sufficient thickness.**
- . **1mm relief over saddles for acrylic**



Finish and Polish

- **Framework should be highly polished**
- **No pits, nodules, scratches or sharp edges (stress concentration and might injure mucosa).**

Framework Adjustment

Reduction can be undertaken with

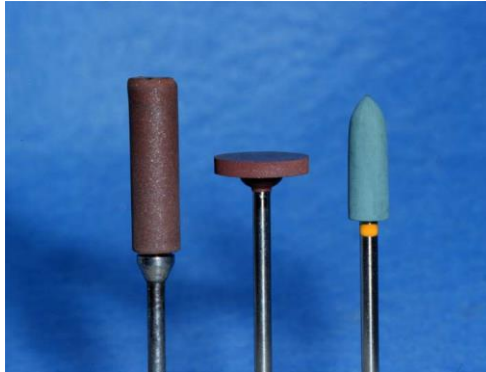
- . **Heatless stones**
- . **Diamond burs**
- . **E-Cutter burs.**
- . **Coarse stones**
- Shofu coral stones**
- Carborundum disks**



Polishing can be undertaken with:

- . Carborundum points & wheels**
- . Final polish - Shofu brown & green points**

Use care!



Clinical Adjustment

- Incomplete seating of framework is a common problem (usually binding on abutments)**
- For adjustment use an indicating medium**
 - . Aerosol Sprays (Occlude)**
 - . Disclosing Wax**
 - . Silicone**

Aerosol sprays

- . Thin, accurate and not easily displaced

But

- . Can dissolve in saliva
- . Difficult to remove
- . Can't tell how far from seating (2D)

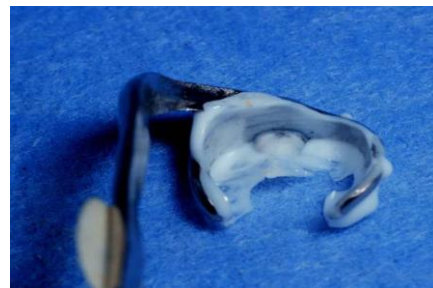


Disclosing Wax

- . Sets immediately
- . Inexpensive
- . Shows how far from seating (3D)

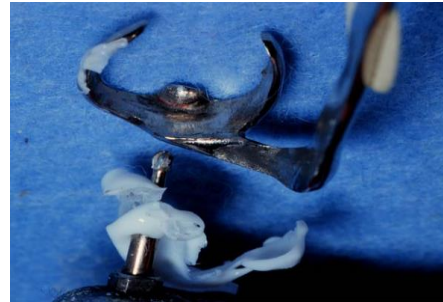
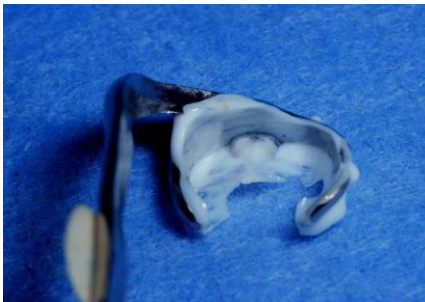
But

- . Can stick to teeth
- . Can be distorted
- Adjust areas of significant show-through. Completely remove wax with metal particles. Repeat until full seating



Silicone indicating medium

- . Three dimensional**
 - . Minimal distortion**
- But**
- . More expensive**
 - . Sets relatively slowly (~ 2 min)**
 - . Can tear or pull off the framework**



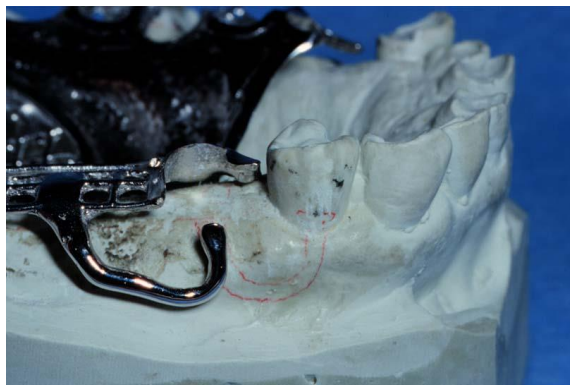
- . Use minimal amount (expense)**
- . Cover all components contacting the abutments**
- . Mark contacts with dampened red pencil**
- . Remove silicone material**
- . Adjust marked areas**



Initial Assessment of framework fit:

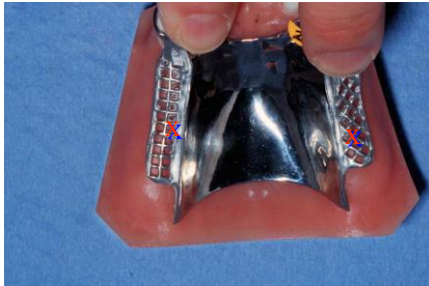
- **‘How does the framework feel?’**
- **No pulling or wedging (Active engagement of abutment teeth)**
- **Overall comfort of the framework**
- **Determine if casting fits similarly on the cast and intraorally. If not, final impression is inaccurate and a new impression should be made**

Areas of abrasion on master cast may indicate areas of binding



Place indicating medium

Align the framework, place pressure over rests. No pressure over saddles. Check for 'show-through'. Repeat



Most common interferences that prevent complete seating:

- . Under rests
- . **Rigid portions of direct retainers**
- . **Interproximal portions of lingual plates**
- . **Interproximal minor connectors**
- . **Shoulder areas of embrasure clasps**
- After adjustment is completed, a thin even layer of indicating medium is applied results in greyish hue from underlying metal. Complete seating with gliding sensation and no grating or snapping



Soft Tissue Impingements

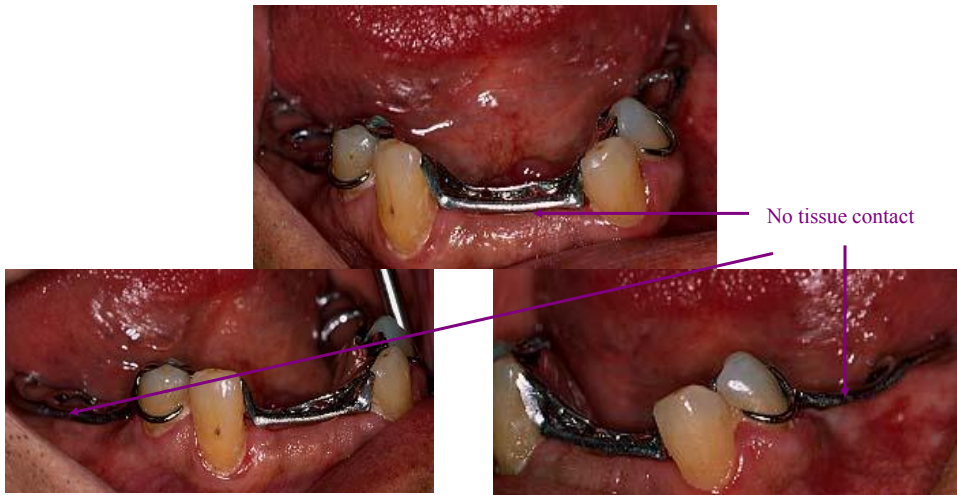
Detected using pressure-indicating paste

- . Apply a thin layer with streaks. Place with moderate pressure



- . Areas of show-through should be relieved while remaining streaks indicate no contact
- . Maxillary major connectors have broad even palatal contact





The metal framework tried in the mouth to verify the fit. Notice that the underside of the framework in the areas where teeth are to be placed is not in contact with the tissue.

Occlusal Adjustments

- RPDs are fabricated on unmounted casts. So, occlusal interferences usually present**
- **Occlusal vertical dimension should be unchanged**
 - **Centric and eccentric contacts should be identical with or without the framework**
 - **With highly polished metal, articulating paper marks poorly. So, check opposing occlusal contacts or slightly roughen framework with air abrasive or rubber impregnated abrasive**

- **Adjust individually opposing frameworks, then adjust them together**
- **Eliminate interferences between the frameworks**

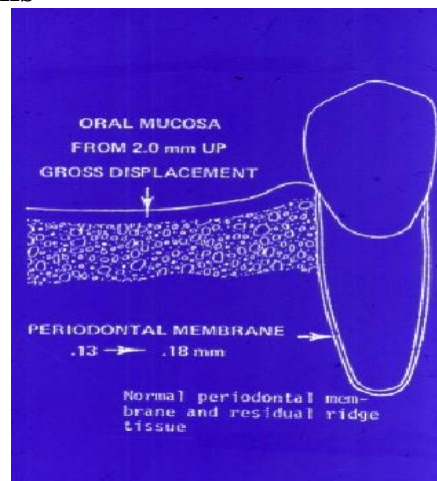


- **If occlusal rest thickness is ≤ 1.5 mm after adjustment, rests will be subject to fatigue and possible fracture**
- **May require additional tooth preparation and remake**
- **Last resort - occlusal reduction of opposing teeth**
- **Adjust minor interferences caused by retentive arms. Reduce opposing cusp - last resort**
- **With heavy contacts: Lower height of contour and remake**
- **Don't relieve clasps (alters flexibility and fracture resistance)**

Altered Cast Technique

Corrected (Modified) Cast Technique

- The difference in compressibility between the denture bearing mucosa and the periodontal ligament of the abutment teeth will cause the free-end saddle to sink under occlusal load and RPD to rotate about the support axis



The Purposes for altered cast technique

- **Reduces the support differential between ridge and abutments by obtaining a compressive impression mimicking functional loading.**
- **Provides a more accurate relationship between abutments & ridge**
- **Improves load distribution and denture stability**
- **Corrects peripheral adaptation**

Indications for altered cast technique

- **Class I & II RPDs**
- **Framework most likely to be adjusted in the future (need for relining and rebasing)**
- **Extensive Class III & IV cases**
- **Tooth mobility + compressible mucosa**
- **Less necessary in maxilla**

Technique

- **Ensure well-fitting framework on the cast**
- **Place relief over ridge (1 mm wax relief)**
- **A custom acrylic impression tray is fabricated over the framework**



- **Check seating of the framework on the cast. If not seated, remove, repeat tray construction (rests fully seated, tissue stop contacts cast, metal adjacent abutment contacts cast, no resistance as framework seated).**



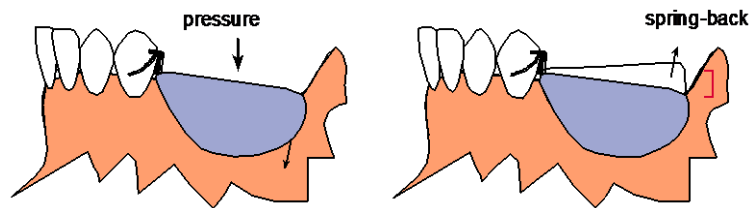
- **Check peripheries of the tray (2-3 mm short of vestibular)**
- **No displacement when cheeks and lips are pulled or when the patient activates tongue**
- **Border moulding is undertaken to simulate final denture border**



- **Before making the impression, ensure tray is well retained by framework**
- **Remove wax spacer**
- **Coat tray with adhesive and wait for 10-15 minutes**



- Polyvinyl siloxane (light or medium body) or zinc-oxide eugenol can be used.
- Carefully load tray and make sure no material is under rests, guiding plates, max. major connector, etc.
- Seat the framework applying pressure over rests. No pressure should be applied on saddles or unoccluding teeth (Fulcruming or tissue compression). This might cause spring back and lack of tissue contact.



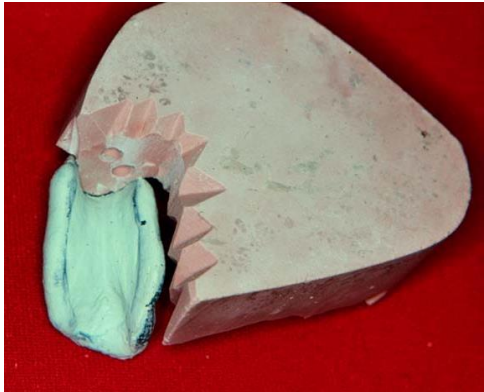
- Remove the impression and inspect it:
 - . Absence of voids
 - . Minimal show-through
 - . The impression must cover supporting tissues
 - . Framework is fully seated.
- Modify small errors or retake impression



Send to the laboratory. Residual ridge is sectioned from the original cast



- **Ensure no contact between impression & cast**
- **Place retentive grooves in cast**
- **Sticky wax in place**



- **Box the impression ensuring water tight seal**
- **Seal retainer, major & minor connector borders**
- **Pour new ridge areas in different color stone**



Problems with the Altered Cast Technique

- **If tray is added carelessly, it can alter passive relationship between framework and teeth**
 - **Excess impression material under framework, might cause incomplete seating**
 - **If inadequately sealed, stone over teeth, can't articulate model**
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- **An alternative procedure involves rebasing the completed denture by applying zinc-oxide eugenol impression on the acrylic fitting surface of the relevant saddles and taking an impression while the denture is being seated by pressure on the rests. This might disrupt the evenness of the occlusal contacts in the saddle area by creating premature contacts posteriorly.**