Impression in partial dentures

Dr Hakimeh Siadat, DDS, MSc
Department of Prosthodontics & Implant
Faculty of Dentistry,
Tehran University of Medical Sciences (TUMS)
hsiadat@sina.tums.ac.ir

www.drsiadat.com

6 January 2013

Hakimeh Siadat
DDS, MSc.

Goals of the Impression Techniques for the RPD

- Clinical Procedures – two impressions: master cast and design cast.
- Record all tooth and alveolar surfaces
- Surfaces that will contact the RPD framework
- Occluding tooth surfaces
- Critical landmarks: retromolar pads, hamular notch, vestibular depths and edentulous regions

Select of Stock Tray

Select of Stock Tray

Stock Tray Try in

Stock Tray Try in

6 January 2013

Hakimeh Siadat
DDS, MSc.

6 January 2013

Hakimeh Siadat
DDS, MSc.

6 January 2013

Hakimeh Siadat
DDS, MSc.

6 January 2013

Hakimeh Siadat
DDS, MSc.
Primary Impression

Two impressions will be needed

To avoid bubbles, use your finger to apply alginate impression material to rests, guide planes, occlusal surfaces and the gingival margins.

Primary impression

Double Pour Technique

Do not invert first pour of stone until initial set. Then add the Base (10-15 mm thick).

Primary cast

Trimming

Primary cast
Final Impressions for Partial Dentures

- Framework Impression
- Altered Cast Impression

Preliminary Casts

Extensions, Hard and Soft Tissue Landmarks Visible. Use Alginate and Stock Trays

Custom Tray Fabrication

Block-out Soft, Hard Tissue Undercut Areas.

Fabrication of Custom Trays

- Apply Spacer for Impression Material.
- Elastomeric Material: 2-4 mm
- Alginate: minimum 3 mm

Tray Resin Manipulation


Custom Tray Fabrication

Carefully remove all wax from the tissue surface of the tray with hot water. The impression materials we use will not stick to the wax and there is risk of the impression material separating from the tray distorting the impression.
Framework Impression

Border Molded Custom Tray
- Tray that is made for patient
- Mold tray periphery with thermoplastic compound

Prior to the Final Impression

- No plaque or calculus
- Healthy soft tissues
- Initial therapy complete

Preparation for Impression

- Practice inserting & removing tray
- Dry tissues

Preparation for Impression

- Block out
  - large embrasures
  - bridge pontics
- Don’t cover occluding or framework surfaces

Alginate with Custom Tray

Tray Preparation:

- Silicone and Rubber Base Impressions
  - Adjust Length of Tray Borders
  - Remove Over-extension
  - Border Mold All Borders with Compound
Impression Tray Preparation

Place Adhesive on Internal and External Areas
Use Disposable Brush

6 January 2013
Hakimeh Siadat DDS, MSC.

Prepare Patient and Mixing Area

When using elastomeric impression materials: Use gauze and saliva ejector to remove excess saliva, prepare mixing area, and use an assistant

6 January 2013
Hakimeh Siadat DDS, MSC.

Mix With No Streaks

6 January 2013
Hakimeh Siadat DDS, MSC.

Hard and Soft Tissue Extensions and Borders

Completed Impressions

6 January 2013
Hakimeh Siadat DDS, MSC.

Framework Impression

• Material of Choice
  – Polyvinyl Siloxane

6 January 2013
Hakimeh Siadat DDS, MSC.

Framework Impression

• Polyvinyl siloxanes
  – Excellent dimensional stability
  – Good tear strength
  – No taste
  – Glove contamination
  – Relatively hydrophobic - improved

6 January 2013
Hakimeh Siadat DDS, MSC.
**Framework Impression**
- Syringe low viscosity material
  - Around abutment teeth
  - Over occlusal surfaces
- Use care in rest seats
- Do not overfill trays - overextension

**Framework Impression**
- Medium viscosity in tray
  - Increased filler content
    - Less shrinkage
  - Less displacement of soft tissues than high viscosities

**Evaluating the Impression**
- Absence of Significant Voids
  - Any area where metal contacts abutment (e.g., rests, minor connectors)
  - Any area where major or minor connectors contact soft tissue

**Boxing the impression**
**Mark Denture Base Extensions**
The mark should be placed 3-4 mm above the peripheral roll.

**Placement of Wax**
- Soft Tissue Undercut And Tongue Areas
- Beading Wax To All Borders
- Boxing Strips To Beaded Areas

Apply sticky wax to marked border.
Box and Pour Master Cast

Carefully remove salivary residues and dry the cast. Polysulfide casts need to be poured within 30 minutes.

Master Cast

- Pour in improved dental stone
- Type IV (Silky Rock)
- Vacuum mix stone
- Allow to set at least 1 hour
  - strength to resist fracture

Master Casts Prior to Separation

Separate the Casts

Use warm water to soften impression materials

Framework Impression

- Box & pour impression
- Survey & tripodize
- Draw design
- Send to Lab with Work Authorization for framework fabrication

Master Casts

- No significant bubbles or flaws
- Teeth not fractured from cast
- Includes all anatomical surfaces of final impressions
- Includes 3-4 mm. land area
Master Cast

- Base parallel ridge
- 12 mm (.5”) thick (minimum)
- Evidence of a dense stone surface
- Clean & well trimmed (keep wet while trimming)

Physiologic Adjustment & Altered Cast Impression

Flow Chart of the RPD Clinical Procedures

Diagnosis and treatment plan
Mouth preparation and impression for the RPD framework
Seat and fit the RPD framework
Physiologic adjustment and altered cast impression if it is extension base RPD
Maxillomandibular registration (obtain face bow, VDO, and CR records)
Tooth selection
Wax partial denture try-in if it is esthetic or complex case

Types of Removable Partial Dentures

UCLA Functional Design Classification

1. Tooth Borne Partial Dentures
2. Extension Base Partial Dentures

Tooth Borne Removable Partial Dentures

- Abutment teeth border all edentulous areas
- Functional forces are transmitted through abutment teeth to bone

Extension Base Removable Partial Dentures

- Distal extension & anterior extension RPDs
- Functional forces are transmitted through abutment teeth & mucosa to bone
**Physiologic Adjustment of Extension RPD Framework**

- **Masticatory force**
  - The proximal plate/minor connector could bind or torque the teeth as the extension RPD moves in function.

**Why we need to do physiologic adjustment for extension base RPD?**

- To establish a safety factor for abutment teeth to minimize the torquing or binding force due to bone resorption or poor edentulous area support.

- When the prosthesis is an extension partial denture, it is necessary to physiologically adjust the casting to allow for the movement of the prosthesis. This adjustment keeps the axis of rotation within the planned rest rotation axis, with forces in the long axis of the abutment teeth.

**Effective preventive measure to protect abutment teeth for long run!**

**Inspection of the RPD Framework Casting**

- **Design Adaptation Quality**
  - The Framework is adjusted until it smoothly comes on and off the master cast.

- The rests needs to be completely seated with intimate contact.
Inspection of the RPD Framework Casting

The tissue surface of the casting is inspected for nodules, roughness, and imperfections.

Rounded positive rest
Metal flash needs to be removed

Frame work try in

Frame work try in

Check for occlusal interference

Paint a thin coating of gold rouge with your brush on the tooth-contacting areas of the framework

The casting is placed in the mouth and moved as in biting function with heavy pressure applied to the extension area.

Adjustments are made to the framework in the areas that are binding with carbide burs and high speed grinding stones.
When to stop the physiologic adjustment?

Until the casting moves easily with the rest at the axis of rotation rolling smoothly in its rest seat w/o lifting and the abutment tooth is not torquing.

Why Altered cast

Hakimeh Siadat DDS, MSC.

Altered Cast Procedure

The purpose of this is to obtain the maximum support possible from the edentulous area of the extension partial denture.

The casting which has been physiologically adjusted is placed on the master cast.

A single layer of baseplate wax is placed over the edentulous area to provide a space for the impression material.

Remove some wax from the denture base connector area to provide for the mechanical lock of the acrylic to the metal.

Warm the metal casting and reseat on the master cast ensuring that all rests are well in place.
**Prepare the tray:**
The purpose of the tray is to carry a uniform thickness of the final impression material to the mouth without exerting pressure on the mucosa.

**When the plastic tray material is cured the entire cast is submerged in the warm water for few seconds for easy separation, then the wax spacer is removed.**

**The plastic tray is trimmed and polished.**

**The tray is placed in the mouth and checked for proper peripheral extension.**

**Border extensions are refined with modeling compound, then cut back to allow room for the impression material.**

**Vent holes are placed in the plastic tray near the finish line for escape of excess impression material.**
Impression Procedure:
Light body rubber base or metallic paste can be used

Material is mixed, the tray is loaded, and the casting is firmly seated on the teeth and held in position over the rests until it is completely set.
Do not place or allow movement on the edentulous area!

Trim the impression material exactly to the metal finish line on the tissue surface

Cast Alteration:
The edentulous area of the master cast is removed, and the metal casting is seated in place on the teeth.
The casting is secured to the stone cast with sticky wax.
Note: Only the metal will touch the cast.
All impression areas must be out of contact.

Retention grooves are placed in the cast. The impression is beaded and boxed and ready to be poured in vacuum-mixed stone.

The altered cast with the edentulous area repoured
This produces the best possible support and orientation of the metal casting to the remaining teeth

Effective preventive measures to protect abutment teeth by providing 2-3 times greater mucosal support and minimizing denture movement.
Altered cast technique

Altercast Impression

Thank You

www.drsiadat.com