Trimming Casts: Occlusion 5002 (three types)

1. Removable casts with vestibule
2. Fixed cast with no vestibule
3. Bleaching cast with no palate

Our Goal

- What do we know?
- Pouring casts
- Trimming casts
- Duplicating a model with an alginate impression
- What do we need to learn?
- Principles for casts
- Dimensions for stone
- Patient differences on cast design
- Cast needs for different situations

GOAL: Quality Casts

Two-Stage Pour

- Use for ALL Casts except bleaching
- Water and air rise during setting so…
- Tray suspended right side up
- Base added after initial set

Quality Casts

REVIEW First Pour

- Impression lightly dried
- Stone vibrated into impression starting slowly from one corner
- Impression suspended, retention nodules for second stage added
- Set at least 12-15 minutes

Vacuum mixing to avoid bubbles

Is your vacuum hose clogged?

Know what happens when you turn it on without the hose in place, then close the hole
Connect the hose and check again

Close the hose for final check

If the hose is stopped up, you should replace the gauze and check the opening.
You only need one square of the unfolded 2X2 gauze

Do not allow the stone to fold over on itself: traps air

Fill the teeth, then remove from the vibrator and complete filling the impression by hand. Jiggling motion to move the properly mixed stone

Vibration, Angle of impression, and amount of stone determine flow rate and lack of bubbles

The first increment should be the SMALLEST!!!
Always add stone at the same areas

Pour Stone 2 mm over depth of vestibule

Cover the alginate and wax, but avoid locking onto tray
The tongue space can be filled with wet paper towels, PlayDoh®, or alginate to form the base area to minimize trimming later.

Avoid mix that is...
too runny: weakens stone
too thick: does not flow so have air bubbles

Good tongue space block out

Difficult to remove tongue stone without damage to teeth
Impossible to remove successfully!

WET AND WIPE!!! For additions

Use flat plastic square or tile to minimize trimming

Make base larger than initial pour

Too much base means lots of trimming

First pour captured details of vestibule; second pour has adequate stone to preserve vestibule with adequate land area

The amount of vestibule needed is not all that is captured in the alginate impression, but only the thickness of the vestibule with a depth of 2-3 mm (for a flange of a prosthesis)
Good and bad points?
1. How to “clear” spatula to stack stone
2. Clear tongue space
3. Support heels of mandibular

What is wrong with these pourings?

Quality Casts
Second Pour
- Cast must be wet.
- Wipe stone into undercut areas on base
- Invert onto patty and shape base
- Set for additional 35-45 minutes

Quality Casts
Second Pour
- Blend two pours together
- Do not lock stone onto tray
- Allow stone to set, but not so long that alginate hardens

Quality Casts
Second Pour
- Remove from alginate within one hour
- Remove stone that is locking the tray first, using wooden handle chisel/knife
- Remember which way the teeth point!
Quality Casts
Second Pour

- Remove from alginate within one hour
- Remove stone that is locking the tray first
- Remember which way the teeth point!

Why no good land area?

Building up the heels of the mandibular cast, while clearing the tongue space and avoiding locking the tray in the stone.

If the first pour of stone is not wet, the second pour will not bond well.
When trimming, the layers separate when dry, can superglue together if a good fit, however, when separate later, chance they may again debond best to avoid rather than have to correct, repour base.

Avoid separate of two pours by always having "wet" set stone for second mix, and good consistency of second mix (by hand).

So when trimming, the layers separate

Quality Casts
Trimming The Cast
- Never trim dry on standard wheel trimmer
- Trim with proper contours
- Watch base thickness
- Clean off all nodules
- Fill in all critical voids

Not What We Want

Quality Casts
Trimming The Cast
- Trim base parallel to occlusal plane
- Trim land areas as required for specific cast use
- Watch your fingers
- Watch the tooth surfaces
Inaccurate cast due to allowing slurry from grinding to bond to the cast

Avoid by frequent rinsing during trimming
May use soft brush to dislodge

Quality Casts
Trimming/Storage

• Trimming with burs best when dry
• Trimming with knife or instrument best when wet
• Never ship or store damp

Fixed & Removable Casts

“Removable Cast”
- Teeth focus
- Attached and unattached Tissue focus
- Vestibule width at 2-3mm
- Land area to strengthen cast at vestibule
- Hamular notches
- Retromolar pad
- Mounted to remove

“Fixed Casts”
- Teeth focus
- Attached Gingiva
- No Vestibule
- Trimmed to Terminal tooth
- Edges beveled
- Mounted so as not to be removed
Fixed casts do not need vestibule.

Removable casts and orthodontic casts need vestibule and all areas of soft tissue to see undercuts and boney protuberance.

Fixed casts only need the teeth and enough stone to mount in an articulator.

Removable cast guidelines preserve the proper thickness of the vestibule for the flange of a prosthesis.

Fixed casts have the teeth and the attached gingiva for occlusion and missing teeth issues.

Trimming Various Casts For Dentistry

Step 1 is to trim the cast so the base is parallel to the occlusal plane: anterior-posterior, and lateral.
One side touches before the other

Requires two views in two planes to correct

Step 1 is to trim the cast so the base is parallel to the occlusal plane: anterior-posterior, and lateral

Trim the bottom of the base first
Hold position till underside is completely flat

Keep slurry rinsed, and inspect in both planes frequently

Half inch thickness is measured by feel to avoid grinding through palate or having cast fracture. Patient anatomy will determine thickness of base

Hold position till underside is completely flat

Keep slurry rinsed, and inspect in both planes frequently
First get bulk reduced. Then lower height down to 2 mm. Then reduce sides to correct dimension and shape. The closer the base pour and first horizontal trim to ideal, the less vertical trim needed to create the proper vestibule.

Pour Stone 2 mm over depth of vestibule. Cover the alginate and wax, but avoid locking onto tray.

Base added to be parallel to tray bottom. Base added to be parallel to tray bottom.

Base trimmed flat parallel to occlusal plane, then trim sides. First trim from side until land area left of about 2 mm.
Second let dry and trim from occlusal until depth of vestibule left of about 2 mm

Third trim from side until width of land area returns to about 2 mm

Imagine the 2 by 2 mm dimensions preserving anatomical landmarks for the appropriate cast design

Imagine how much of the impression of the cheek that is in the stone must be removed to obtain a 2X2 vestibule

Trim wet with water running to appropriate dimension
If you don’t trim the bottom of the base FIRST the sides won’t be perpendicular to the base.

The better the second pour is positioned originally, the less trimming that is required for the cast.

If you don’t trim the bottom of the base the sides won’t be perpendicular to the base.

The model trimmer must be set at 90 degrees for the angles to be appropriate.

Planning for the trimming step when initially pouring will eliminate much work later.
You cannot lose sight of where you are trimming when working on the sides.
2-3 mm thickness of land area is related to the depth and width.

Palm thumb grasp is essential for protection of your hands and the cast.

Set Aside Until The Casts Are Dry to Trim

Dust collector and frequent air blasts avoid stone sticking to the cast.

Check out air gun for lab and dusty work

Stone cutting wheel is aggressive, but dangerous.

May be best only for bleaching cast.
Review how the pour influences the trimming ease

Problems?
What did they forget to do?

Errors?

4-6mm

2-3mm

2-3mm

4-6mm

2-3mm

4-6mm

2-3mm
Defects and errors in the cast must be addressed

What caused the positive bubbles, and how avoid (2)?
What caused the negative bubbles, and how avoid (2)?

Removal of nodules should be very selective, as each place altered is now an inaccurate portion of the cast

Since removable casts are removed from the articulator to be processed and then re-attached, some orientation means is needed

Notches that have no undercuts are used, with vaseline in them as well as vaseline in the center of the cast

Principle: Notches with no undercuts of significant dimension to be poured with mounting plaster and preserved during separation will allow repositioning of the cast back on the articulator after some event.

Removable has now gone to three round for ease
Classic was four sharp pyramids as are shown in handout
Fixed casts have the minimum vestibule without damaging the teeth during trimming.
Fixed casts are not meant to be separated from the mounting, so notches are merely “insurance” in case they do separate.

Use a pencil or permanent marker to identify the patient, the date of the casts, the articulator settings, etc. on the sides of the casts. Only write on the base if the casts are not to be mounted.

This will be covered with mounting stone.

Name & Date

Name & Date

Pour with adequate thickness to separate, but no obvious base.

Bleaching Tray Cast

Stack only enough stone to remove the cast, not for a large base.

Wrap to preserve in plan to repour.

Tree to support.

Microstone

Cast Development

- Minimum positive blebs (finger wipe)
- No voids on teeth (correct LC Blockout)
- No tissue distortion (adjacent to teeth)
- No vestibule (trim from base side)
- Horseshoe or thin center area / hole
- Central incisors vertical to flat base
- Dry (for porosity and adaptation when ready to fabricate tray)

Options for Maxillary Cast for Bleaching Tray

1. New alginate impression
2. Duplicate existing cast
3. Double-pour properly-managed alginate impression
Double-Pour Alginate Impression

- Due to the extensive trimming of the cast for the tray, double-pouring the alginate impression generates a 2nd diagnostic cast for occlusal or esthetic treatment.
- First pour must be kept in wet towel or humidor until stone has set (20-45 m).
- Rinse and repour (if no tears) results in cast of equal quality to an additional impression.


Final trimming of cast will have no vestibule.
2-10 mm beyond teeth.
Flat base.

Trim base such that central incisor teeth are vertical.
This will avoid folds in the tray when fabricating.

Flat base with hole in center or horseshoe shape.

Avoid damaging teeth by trimming cast from base until vestibule is reached and hole is in palate.
Any defect on the cast will not allow the tray to fit properly.

Incorrect trimming of the cast creates an artificial shape that will not be found in the mouth.

Since the tray is formed by a vacuum-former, you cannot have voids in the teeth either.
When blocking out negatives, the block-out material must be slightly greater than the defect.

Cannot block out undercuts with wax, since tray is formed in vacuum former with heater

LC Blockout is a laboratory grade blue light cured composite.

It was designed for spacers or reservoirs on bleaching trays. MCG does not use reservoirs, but the material is good for other cast issues

Use to fill in defects so the tray will fit
Do not use stone, as that is difficult to see and messy

Slightly overfill
Light cure for 20 seconds
Wipe air-inhibited layer

If you have bubbles, they must be filled with LC Blockout (not wax) to be slightly bigger than the missing area, but smooth

LC Blockout can be used to block out undercuts with fixed retainers, pontics on FPDs, and severe undercuts on teeth
Use block-out for voids or cast defects
Also for undercuts that would lock tray onto cast

Natural defects, chips, nicks

Summary
- Have one maxillary cast of yourself trimmed for bleaching tray fabrication
- Store this cast until the end of the semester in the box provided by dispensary
- You will fabricate a bleaching tray on this cast at the end of the course
- You will insert it on yourself to see how the tray feels in the mouth

Location for extra to wipe on occlusal surfaces
Forces on tray to seat posterior; watching anterior

Alginate review for second group: Operator position reason

Topical Anesthetic Spray in the clinic
Same patient, but difference in techniques
Ideally want bubble-free occlusal surface

Fit wax to palate, then vestibule
Adhesive on green tray and on wax

Most significant errors are not seating tray far enough
Taking too long to load tray after 30 second mix and get seated completely

Bend tray options and technique
Heat, bend, water cool, try-in again

Clinic & Lab today
- **Alginate impressions**
  - Maxillary
    - RPD
    - FP
    - B
  - Mandibular
    - RPD
    - FP
- Axium
- Project sheet
- **Pour and Trim**
  - RPD
  - FP
  - B

- Need RPD by July 1 to mount with FB
- Model trimmers also on second floor
- Next session for catchup, retakes and trimming

Questions??