

CLEAR, THIN, & STRONG

making bite splints successful through effective design

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START WITH THE GOAL

visualize a smooth, dense, anatomically correct splint



SET YOUR STAGE

clear your schedule, your desk, and your head
and plan to make it correctly the first time

ARM YOURSELF

- mounted study models
- wax for blocking out rotated and spaced teeth
- tin foil as barrier
- lubricant for upper model
- pressure pot large enough to house articulator, filled with 1/2" distilled water, heated, and ready to be pressurized
- Biocryl Ice monomer + polymer - ratio 1:2 liquid:powder
- Spatula for initial mixing and Bard-Parker scalpel for removing excess
- flexible large dappen dish for mixing

STUDY YOUR CASTS

- study each arch separately first; notice areas of rotated and malposed teeth that need consideration for material thickness and where you will compromise in order to achieve desired occlusal harmony
- evaluate clinical crown height - longer teeth need less embrasure retention; shorter teeth may require more lingual flange
- evaluate depth of lower lingual vestibule and shape of palatal vault - plan how the acrylic will position and support tongue posture
- Look for mandibular tori - if flange needs to be shorter to go around tori, does it then need to extend deeper into posterior mylohyoid space? And, if nature buttressed the bone, shouldn't you? Plan to make the splint thicker on the lingual if so.
- observe gumline recession - lower lingual anterior frequently suggest tongue tie or low tongue resting posture; generalized lingual and buccal recession needs to be blocked out during splint fabrication and delivery



SET UP THE ARTICULATOR

- Set models using facebow taken at Frankfurt horizontal plane; lower model set using wax bite at same thickness as future splint
- using a protrusive wax record, dial in the correct horizontal condylar settings
- confirm accuracy by taking mounted models through excursive movements and reference contact pattern with photographs of patient
- take note of close proximity in lateral guidance to either molars or incisors and adjust height of pin to achieve ideal material thickness accordingly (ideally 2mm in all dimensions)



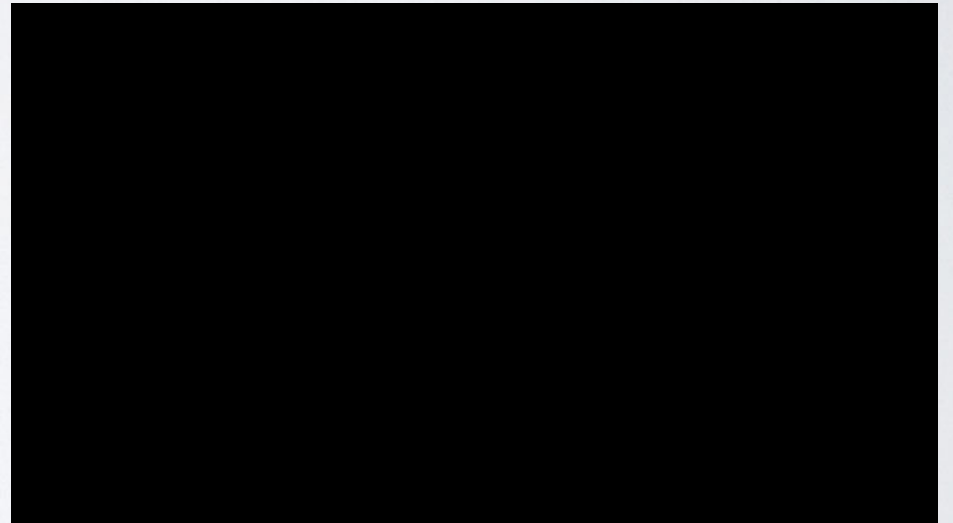
PREPARE THE MODELS FOR FABRICATION

- use hot white rope wax on curved #7 wax spatula to block out embrasures, rotations, and gingival margin contours
- lubricate upper model lightly



PREPARE THE MODELS FOR FABRICATION

- apply tin foil (not aluminum - it is too rough) to lower model, deeply creasing into embrasures and gingival margins
- this provides a barrier and makes removal of splint possible without damaging model



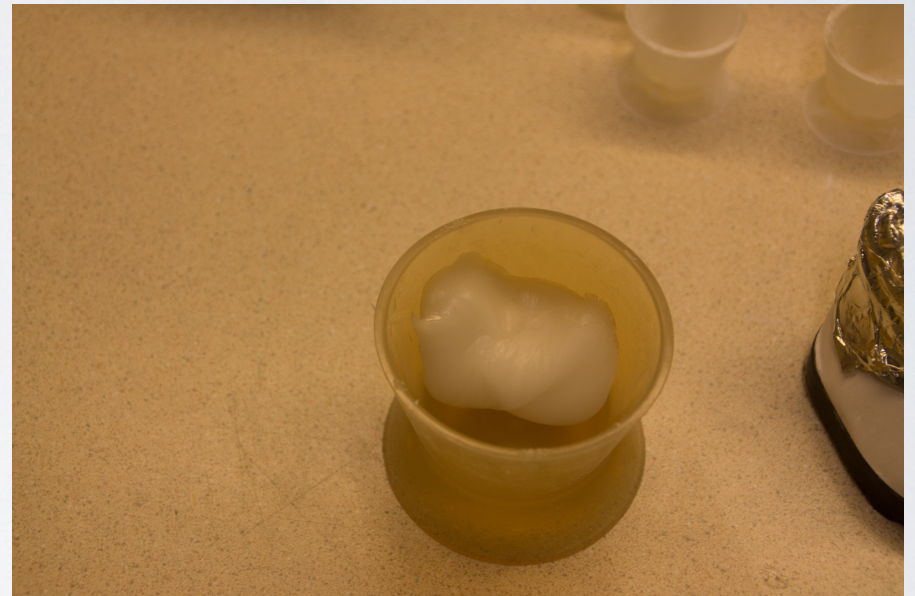
MIX YOUR ACRYLIC

- liquid:ratio is 1:2 - first add one increment of liquid monomer to large flexible dappen dish
- then over low vibration, sprinkle in 2 increments of powder
- after all powder is wetted, gently fold wet acrylic once or twice with spatula - do not stir repeatedly (avoid bubbles)
- after it is all wet leave it alone for 3 minutes. No stirring or other manipulation.



WORK YOUR ACRYLIC

- after shine is just lost from top surface of liquid acrylic, begin manipulating it by bending the sides of the rubber bowl in on the material
- continue until the material no longer sticks to the side of the bowl
- remove material with lubricated fingers and begin to shape into a thick rope
- **do not overwork the material.**



ADAPT ACRYLIC TO MODEL

- apply thick rope of nearly dry acrylic in arch shape
- adapt first to depth of lingual flange with side of finger
- adapt to lingual of lower incisors with thumb
- very gentle pressure is used to avoid fenestration or other weak thin areas
- when in doubt about the material's readiness to set, discard material and start again with mixing process. do not attempt to remove and reposition the same rope of acrylic or bubbles will result.



INDEX OCCLUSAL SURFACES

- place lower cast with acrylic back into articulator - be sure horizontal elements are locked
- slowly close upper over acrylic until it just touches; smooth out indentations with gentle finger pressure from lingual toward buccal
- once pin touches with horizontal elements in locked position, unlock one at a time and LIFT upper cast away from acrylic, shift across lateral excursion, and gently index cross-over into soft acrylic
- repeat other side, and lock both sides
- NOTE: do not allow the acrylic material to become opaque before putting in pressure pot - that will result in bubbly weak splint.



CURE ACRYLIC USING HEAT + PRESSURE

- seat articulator into pressure pot with pre-heated water at 160 F.
- close and lock lid, pressurize to 20 PSI for 10 minutes.
- Remove articulator from pressure pot and allow to fully cool bench top for 10 minutes - this allows the for slight shrinkage to occur on the model



OUTLINE LANDMARKS BEFORE TRIMMING

- UPPER PHOTO: use pencil to lay a straight line for incisal overlap, a curvy outline of upper buccal cusp tips, and a vertical line for distal of canine (very helpful not to remove this acrylic as it is needed for guidance)
- LOWER PHOTO: identify depth of lingual flange and lingual extent of occlusal table; preview again flange design to optimize tongue positioning before going to the lathe



TRIM DOWN INTO SPLINT

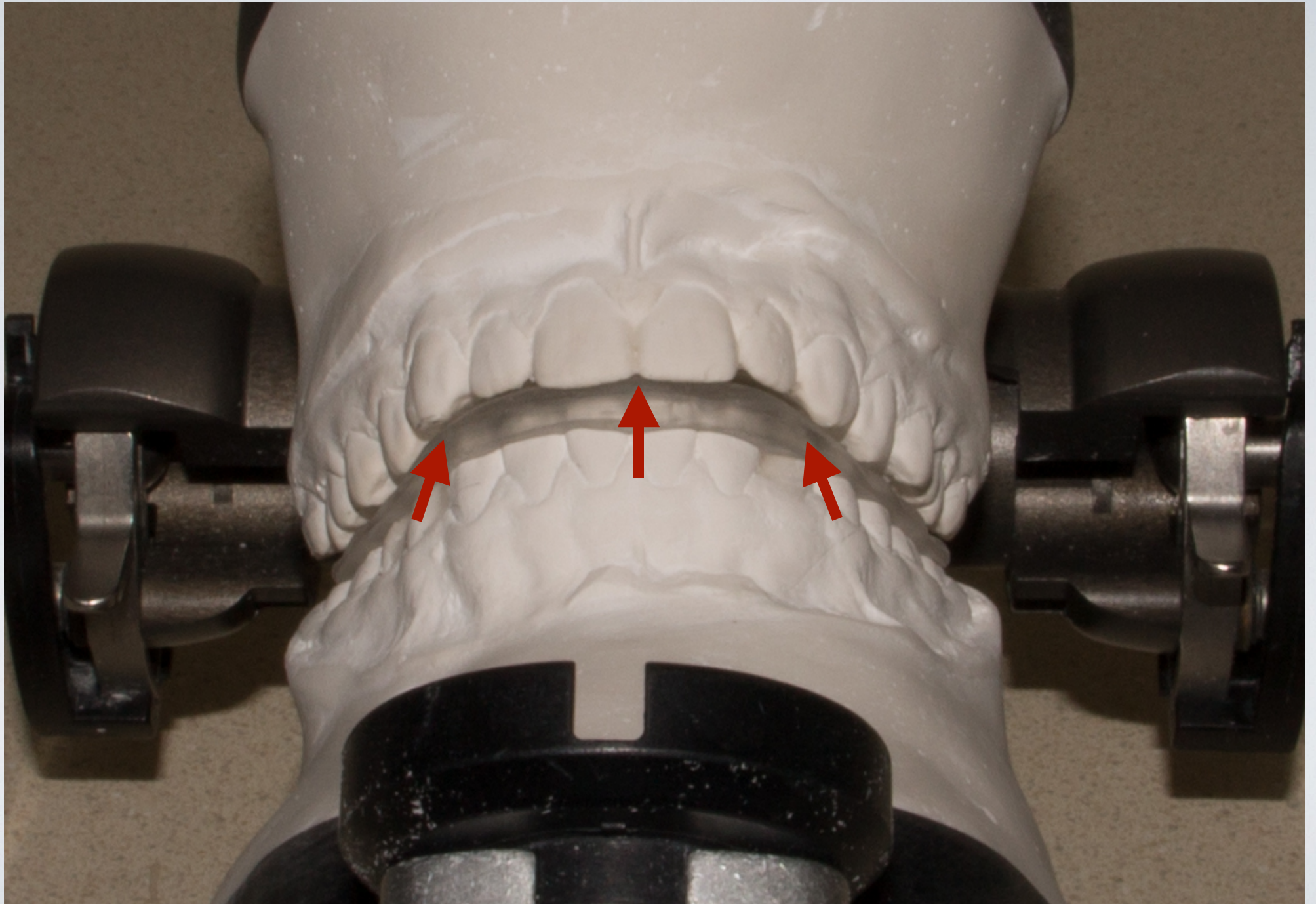
- UPPER PHOTO: thoughtful use of lathe-trimming can result in a mostly finished splint. When in doubt, use E-cutters to hand-trim the lingual flange to protect tongue positioning. See that deepest indentation from upper model stamping has not been removed by lathe (arrow)
- LOWER PHOTO: finished, smooth, polished lower splint ready for final check.



PRE-DELIVERY CHECK

- using articulating paper, confirm all posterior teeth simultaneously touch a flat occlusal receiving area
- loosen horizontal condylar guidance elements and confirm smooth excursions that are no steeper than patient's own guidance
- look at anterior coupling from an incisal view to ensure close approximation without heavy occlusion (zoomed next slide)







FINAL SPLINT CHECK:

clear - without bubbles
thin - 2mm across all dimensions