
Bi-maxillary, complete dentures are an often underestimated, yet challenging form of dental restoration. In a time of diminishing insurance reimbursements and price-pressure from corporate enterprises, it may be tempting to find shortcuts, both for clinical and laboratory procedures. All too often to the detriment of the case outcome.

Whether fabricated analog, digital, or with a combination of both, a complete set of dentures remains a demanding form of full-mouth rehabilitation, which needs to restore not only the patient's masticatory function, but also the dento-facial aesthetics, phonetics and must be made as stable under function as possible. It is the reconciliation of precisely these demands, which requires a great deal of skill and knowledge from both the dentist and the laboratory technician.

Typical complaints from denture patients often include: "I can't eat with my dentures.", "My denture doesn't fit." or "My dentures don't look natural."

Taking the time in the beginning to gather as much information from the patient as possible, and communicating this information effectively to the laboratory, might seem like a disproportionate investment. But I would argue that the extra time spent in the early stages of fabrication, will save significant time later on, and surely reduces the possibility of expensive and frustrating reworks. Small errors and omissions of all parts of the treatment team can amount to treatment failures, often resulting in having to start over from scratch.

One of the often-overlooked working steps here is the fabrication of a secondary, myo-functional model to establish the muco-static areas of the denture bed and



Figure 1 Special Trays for myo-functional impression on primary models.



Figure 2 The myo-functional impressions are boxed and poured to preserve the established valve margins

future valve margins. This step is arguably one of the most essential factors to achieve retention and suction-effectiveness of the dentures.

Using the primary impressions, typically taken with alginate, for final fabrication is insufficient. It is far superior to use such models for the fabrication of the custom (or special) tray. To avoid extensive chair-side adjustments to the wax rim templates, a preliminary record of centric relation and OVD can also

prove incredibly valuable. The technician will mount the final models in an articulator to fabricate the recording devices. The combination of both average values and patient-specific data enables the technician to fabricate very precise diagnostic tools that the dentist can use to convey all necessary information to the laboratory. Ideally, the dentist will use a facebow transfer at this early stage to establish the occlusal planes.

With the help of the initial records and the length of the upper lip, measured with a Papillameter, the technician now constructs the recording devices. Depending on the preference of the



Figure 3 Final models are mounted in the articulator with a preliminary record and a facebow transfer.

clinician, these may consist of stable record bases and wax rims that serve as a type of analog data recorder, and a separate Gothic Arch Tracer assembly. The latter might very well be the most under-utilized tool at the clinician's disposal; its use can reduce faulty records of OVD and Centric Relation dramatically.

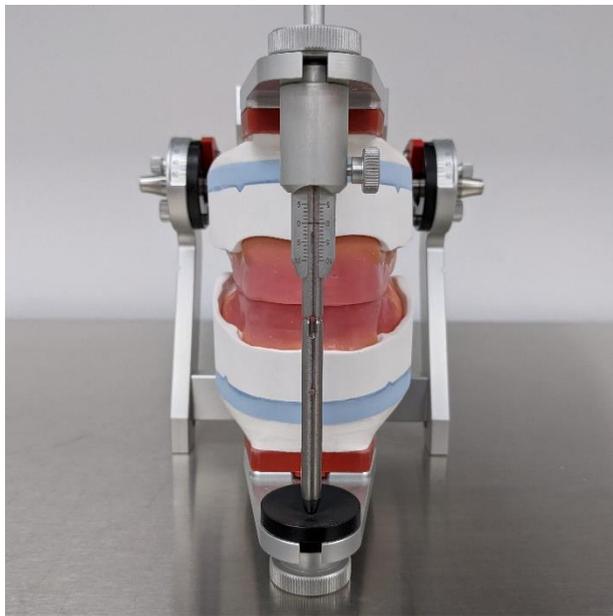


Figure 4 The wax rims serve as an analog data recorder for the trial setup.

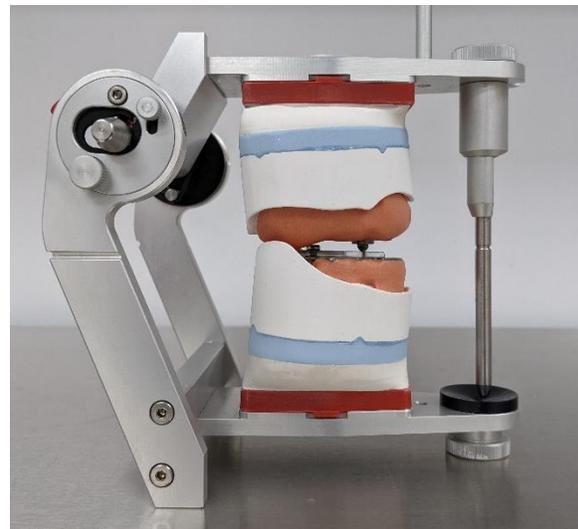


Figure 5 Gothic Arch Tracer assembly in preliminary articulation.

After recording the final bite height and Centric Relation, the dentist collects the remaining patient-specific data with the recording devices. These should include, as a minimum, facial midline, incisal length, cuspid points, lip and cheek support and course of the upper and lower smile lines. Selection of tooth shade and forms should correspond to the wishes, unique features, and personality of the patient.

With the records and information provided, the dental technician can perform the definitive articulation and begin with the trial setup.

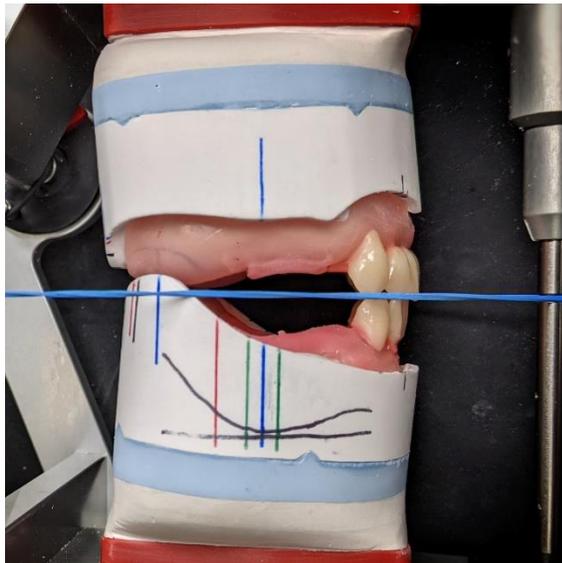


Figure 7 The smile design is based on the information collected by the clinician and preserved by the laboratory.

The wax model submitted to the dentist for try-in should already correspond exactly to the contours of the final dentures. Functional margins and muscle-gripping design of the denture body should allow both dentist and patient to assess the retention of the denture. Along with the obvious evaluation of aesthetics and phonetics, the position stability of the denture under function should be tested with, for example, a small cotton roll or a ball-burnisher. Once the patient and dentist are satisfied with the results, the wax trial will then be returned to the laboratory for finalization of the dentures.

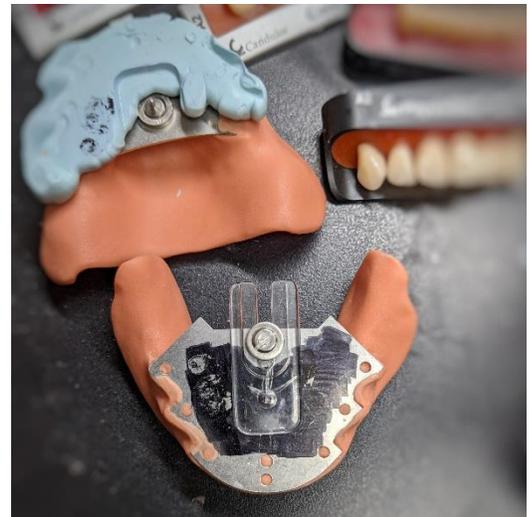


Figure 6 The final record of C/R and OVD

An extensive model analysis creates the blueprint for tooth positioning, taking into account both patient-specific considerations, such as aesthetics and phonetics, as well as static rules to assure position stability of the prostheses.

The decision on the type and morphology of the posterior teeth, along with the occlusal scheme must be carefully considered. The criteria for these choices must include the intermaxillary relationship, the skeletal bite classification, and the stage of atrophy of the residual ridges.

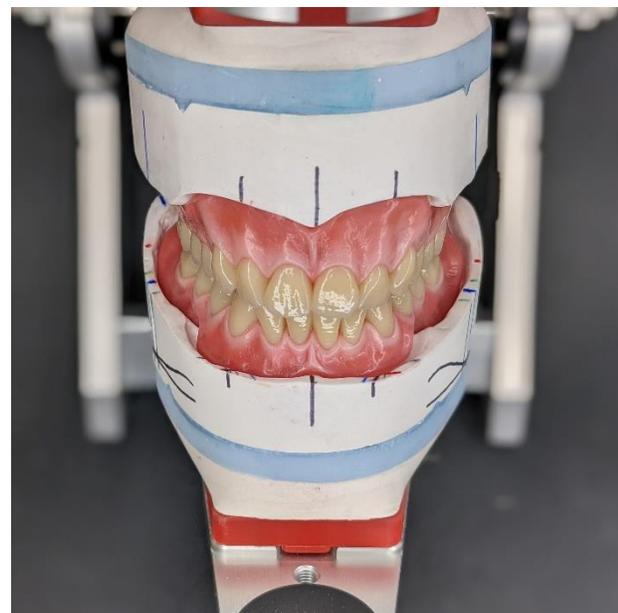


Figure 8 Final wax trial.

There are several methods of processing available; these include pressing, packing, or injecting. The choice typically lies with the technician.

After processing, a laboratory remount and subsequent equilibration of centric and dynamic occlusal contacts is certainly good practice, but unfortunately sometimes skipped. As the denture body was already waxed to contour for the try-in, finishing, deburring, and polishing should take very little time. Great care must be taken that the established valve margins are not inadvertently altered at the finishing stage.



Figure 9 Pressing is a clean and precise processing alternative.



Figure 10 Finishing and polishing with the handpiece.

Conclusion:

It pays to invest some time at the beginning to save a lot in the end.

The final step should consist of a comprehensive quality control protocol before the dentures are submitted to the dentist for final delivery.



Figure 11 The final prosthetics ready for delivery.