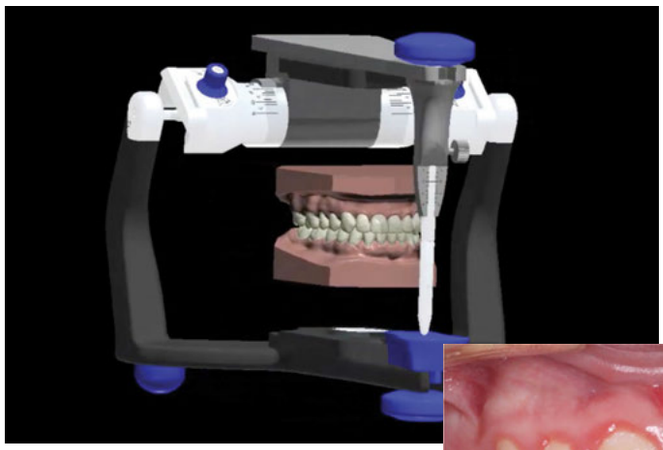
Digital Positioners

James Bonham discusses how new Digital Positioners have improved orthodontic treatment and work-flow



Whenever braces are removed, teeth go through a settling-in process. If a clinician's goal is to treat to a mutually protected occlusion with even posterior stops and anterior guidance, it would be critical to treat to a CR=CO finish. No matter how precise one finishes fixed-appliance therapy, the dentition adapts by settling. The use of a gnathologic positioner built on an articulator is the most accurate way to control the settling process with the condyles seated in the fossae.

In the past, positioners were cumbersome to make because of the many steps involved both at the chair and in the lab. It would not be uncommon to take alginate impressions at debanding to fabricate temporary Essix retainers while the positioner was being made. It was also necessary to take at least one set of upper and lower alginate impressions along with a CR bite record and a facebow recording. The alginate impressions would then be poured, trimmed, and mounted before mailing to the lab for fabrication. Some commercial labs would require two upper and two lower mounted models. The turnaround time was usually 2 to 3 weeks.

In today's digital world, it can be done much easier, better, and with less hassle for the clinician and the patient. Specialty Appliances laboratory recommends the following protocol. Two weeks before debanding, the patient is scheduled for a pre-deband appointment. Prior to scanning, the archwires and any molar bands should be removed. If a lower 3-3 fixed retainer is required, it can be bonded in at this appointment. The arches are scanned with an intraoral scanner with the remaining brackets still in place. A CR bite record is captured anteriorly with four thicknesses of DeLar wax, which was warmed to 140° in a water bath. The wax is then chilled and placed back in the mouth with the patient lightly squeezing. The posterior teeth, which are about 2 mm apart, are scanned with the anterior wax in place to capture CR three dimensionally in space. The scanned arches are saved and exported to the lab as "in occlusion," although the teeth are separated by the thickness of the bite recording. A Kois facebow recording can be taken and scanned at this appointment and also sent to the lab electronically as an STL file. Braided archwires are then placed, and the patient is scheduled in 2 weeks for appliance removal.

Specialty Appliances receives the STL files along with a digital prescription within minutes of scanning. The scanned arches in CR are then mounted on a virtual articulator from 3Shape software and closed to first contact. A virtual gnathologic set up with anterior guidance and posterior disclusion is done with 3Shape software on the virtual articulator. The setup is then printed and mounted on a Panadent articulator for positioner fabrication. At debanding, all brackets and adhesive are removed, and the gnathologic positioner is delivered that day. Compliance is good because the patient has not become accustomed to low-profile Essix retainers first. Also, the teeth are more mobile at debanding, which makes the positioner more effective.

The patient is asked to wear the positioner for 4 waking hours per day plus during sleep. It may fall out during sleep for the first few days, but that is expected. After 6 weeks, the positioner has settled the occlusion to CR, and the detail of tooth positions and fit is excellent. Removable retainers can be used at night from this point. Specialty's digital positioners have made finishing to CR more streamlined and easier for staff and patients alike. OP

Note: Positioner treatment protocol and patient images provided by John Oubre, DDS.

Pretreatment

Pre-positioner

Positioner setup

Post-positioner

James Bonham is a partner and VP of Sales and Marketing at Specialty Appliances. He has spent the past 13 years in orthodontics with a strong focus on the integration of digital technology into orthodontic practices.