

# Digital Orthodontics: Technology in the Modern Practice

by Dr. Gustav Horsey



Dr. Gustav Horsey is a native of Chesterfield, Virginia and maintains a private practice in Henrico, VA. He

received all his training at the University of North Carolina at Chapel Hill (UNC), receiving his undergraduate degree in Biology, next completed the dental program (DDS), and then was awarded a Master of Science in Orthodontics (MS). Dr. Horsey developed his passion for orthodontics after his own treatment was completed as a teenager. He is committed to excellence in patient care and enhancing his patient's oral health, aesthetics, and function. Dr. Horsey is dedicated to continued education and training for himself, as well as his staff.

The integration of technology is essential to the success of any orthodontic practice seeking to increase efficiency and communication. The globalization of all aspects of society, including orthodontics, allows us to now have access to the best resources available to deliver high quality orthodontic treatment in our own communities. The Unitek™ Treatment Management Portal | TMP is a complete software solution to integrate digital model storage, orthodontic treatment planning, and customizing the Incognito™ and Incognito™ Lite Appliance Systems for your patients. Unitek TMP enhances the ability of the orthodontist to diagnose and treatment plan cases using the high resolution graphics and model analysis measurements. Communication tools allow the orthodontist to interact with the 3M Unitek lab using emails, annotation boxes, and images.



## Digital Model Storage

Digital model storage is progressively being adopted by many orthodontic offices as a method to reduce stone model storage needs, increase communication with patients and other dental professionals, and improve treatment planning for the orthodontist. In our practice, we decided to start digital right from the start-up in order to take advantage of these benefits. After testing several of the digital model systems on the market, we chose the Unitek TMP software system for all of our model needs. The system scans the actual orthodontic impression instead of a stone model poured from the impression which helps eliminate possible errors obtained during the stone model fabrication.

The advantages of the Unitek TMP system for model storage are its superior detail in model fabrication, ease in communication with 3M Unitek support, and management of patient files including integration with practice management software (Figure 1). Having used other



Figure 1

systems on the market for digital model storage, I have found that the accuracy converting the impression we send into a digital model is the best with the Unitek TMP system. Also, the occlusion and precision of measurements is calibrated well in the system allowing the models to be an important tool in treatment planning as well as case presentation (Figure 2).

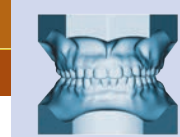


Figure 2

## 100% Customized Orthodontics

One of the biggest advances in modern orthodontics is the utilization of technology to deliver customized brackets, wires, and treatment forecasts to enhance patient results through more effective and efficient treatment methods. The other big push in the field of orthodontics is patient's desire for aesthetic or "invisible" orthodontic treatment, especially as more adults seek care. After studying all the "customized" orthodontic systems on the market, we found that only the Incognito™ Appliance System can truly deliver all three levels of customization and aesthetics. Lingual orthodontics also has the advantage of eliminating the incidence of labial decalcifications during orthodontic treatment.

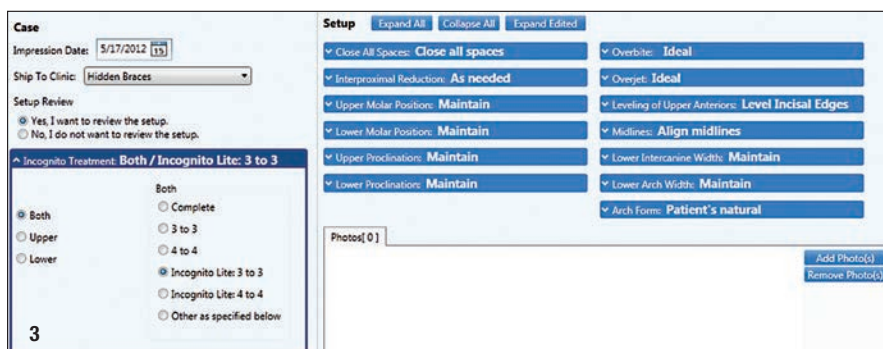


Figure 3

## Digital Work Flow for the Incognito™ Appliance System

### Initial Workup

The Incognito System begins with an accurate two-phase PVS impression and bite registration that you will send to the lab. Unitek TMP replaces the need for traditional paper lab forms to be mailed with the case and allows total digital customization and effective communication with 3M Unitek. Digital photographs can also be uploaded from practice management software to allow enhanced communication. The custom prescription for the brackets, wires, and all treatment planning goals are entered to ensure full utilization of the Incognito system (Figure 3 and 4).

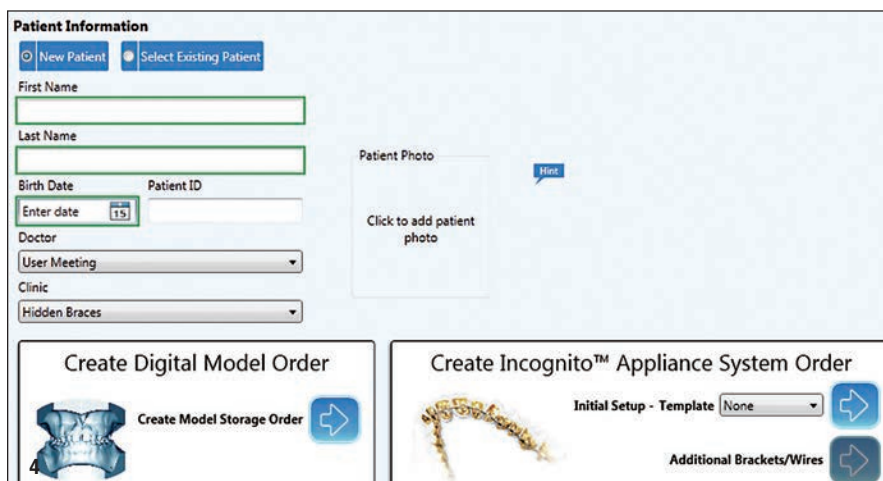


Figure 4

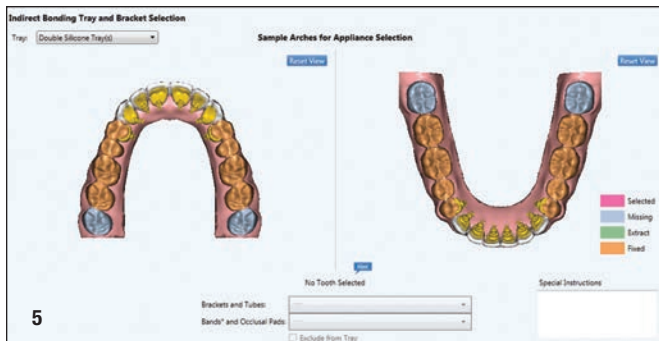


Figure 5

The orthodontist first chooses all customized treatment objectives for the patient’s case including: occlusal, aesthetic, and alignment considerations. Next, the custom fixed appliances are carefully selected from a library of brackets, bands, and additional attachments. The visual cues now available with the Unitek™ Treatment Management Portal I TMP system allow the orthodontist to see the full scope of the setup and rotate the template (Figure 5). Then, the wire sequence is selected from an array of wire sizes and materials with a “Wire Sequence Guide” to aid in case specific considerations (Figure 6).

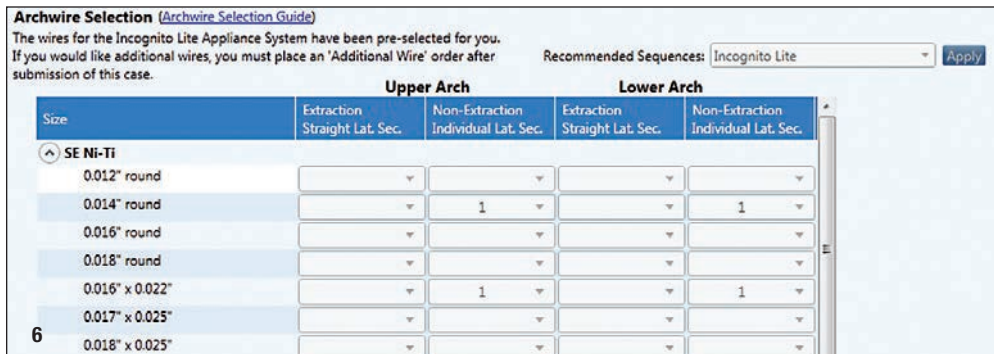


Figure 6

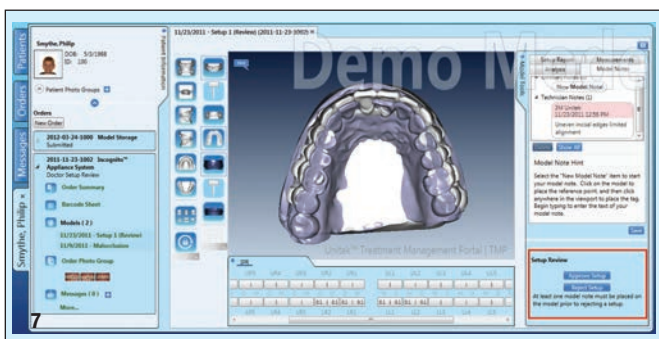


Figure 7

The Incognito system lab then sets up the case using these specifications and taking into account anatomical and biological limitations. The case is mounted on an articulator and the setup is digitally scanned and placed in Unitek TMP for review by the orthodontist. The enhanced communication tools now available in Unitek TMP allow visual cues and measurements to be used to create the most accurate representation of the orthodontist treatment goals. Advanced features like the “overlay” button give the user visualization of initial vs final setup in all planes of space (Figure 7).

### Setup and Fabrication

The power of the technology behind Unitek TMP and the Incognito™ Appliance System truly shows in the digital setup and fabrication of the 100% customized brackets and wires. CAD/CAM software is used to construct the pattern for each individual bracket taking into consideration anatomical and access considerations based on the prescription specified by the orthodontist. Once the case is setup to the final result, the wires are then constructed to achieve the required mechanics. All the necessary archwire bends are determined in the CAD/CAM software and bent robotically to ensure precision.

Using this method, movement towards the final position of the teeth is achieved from the first wire through the entire wire sequence. Throughout the entire setup and fabrication process, communication between the lab and orthodontist is available through messaging within TMP. Utilizing current technology, the Unitek TMP system integrates digital models, customized wires and brackets, and digital treatment planning and setup in an interactive format to achieve maximum patient results.