Appliance-driven therapy

Traditionally, the major orthodontic manufacturers have influenced and driven the direction of advancements in patient care. Not surprisingly, the emphasis has focused on appliances (fixed or shrink wrapped), with anchorage devices as the latest example to flood the marketplace. Selecting from the myriad of anchorage devices can be daunting and bewildering. The current, trendiest treatment approaches are predicated on expensive designer brackets bundled with lofty treatment philosophies that purport to perform magical tooth gymnastics. To observe “handle/bracket” worship first hand, one need only witness the exhibitors’ floor at an AAO convention. There you will find a predominance of the handles with a sprinkling of practice management and novelty items thrown into the mix. This is to be expected as they are a major source of revenue, and we are a profit-driven economy. Unfortunately, the DR, or “Do Right,” component to this equation has been relegated to a minor role. My intent is not to diminish these products, but rather to encourage a de-emphasis in their importance relative to the value of tools that aid in proper diagnosis and treatment planning.

Diagnostically driven therapy

Therefore, it is refreshing that Ora-Metrix provides through SureSmile technology a comprehensive digital decision support system that squarely positions the doctor in the command and control position where he/she rightfully belongs. Incremental improvements in specific areas of orthodontic practice have been achieved through paperless practice management systems, digital cephalometrics, photography and radiography, but one key piece has been missing—a system to integrate diagnostics with therapeutics.

The SureSmile 3-D diagnostic and treatment planning software provides the basis for high-quality results because it is coupled with powerful, customized, prescriptive, superelastic archwires.

An end-to-end solution

Early on in the records-taking process, 3-D diagnostic SureSmile models are created from impressions or scanned from study models. Sophisticated treatment planning and diagnostic software tools are employed using analytical and simulation modalities to assist in case diagnosis and treatment strategy development.

Mind’s eye orthodontics, based on best guess, is supplant by incredibly realistic treatment simulations. The software is extremely versatile and can be applied to all types of cases: surgical, orthopedic, asymmetric, extraction and non-extraction, from the ordinary to the most complex and involved.

This 3-D visual treatment objective (VTO) is created by virtually moving teeth in three planes of space and testing various approaches as deemed necessary. Significant information can be gleaned from this process, and numerous outcomes can be made available for comparison. “What if” scenarios can be examined and problems anticipated, delineated and defined.

Using this medium to collaborate with patients and fellow professionals can be extremely helpful in gaining consensus on treatment options and minimizing misunderstandings that arise from mere discussion.

An additional computerized 3-D model is created at a point during the patient care cycle when the patient is active treatment (brackets placed). Treatment planning strategies can then be refined on this model, and ultimately, a “targeted” setup is created.

The personalized wire prescription is reverse-engineered based on this clinician prescribed setup. Prior to establishing the prescription for the 5-D target setup, it is instructive to perform a quick diagnostic re-analysis by superimposing the pretreatment diagnostic model over the mid-treatment therapeutic model. This allows the clinician to determine if the patient’s biological limits (quantitatively) have been managed and to assess how treatment has progressed in order to initiate any course adjustments.

Tables in the software indicate the nature and magnitude of individual tooth movement designed in the setup. This process allows one to easily make determinations about whether that movement is appropriate and feasible (Fig. 5).

For example, SureSmile software allows planning to identify the constraints of tooth movement and specifies where and how much interproximal reduction to perform as well as other space management approaches. Once the boundary positions have been established for the anterior and posterior teeth, the software aligns the teeth virtually and determines how much IPR will be required.

Based on the clinician’s parameters, if too much reduction is specified, one can modify the torque, arch form or other conditions, as deemed appropriate, with a couple of keystrokes and have the software modify the setup (Fig. 6).

Clearly, this approach to treatment, which is proactive vs. reactive, has several major benefits, foremost of which is the ability to view patients “holistically” rather than incrementally from visit to visit and, therefore, avoiding continually rediagnosing cases throughout treatment. The benefits to this approach are greater control over the tooth movement and significantly greater treatment efficiency as teeth are moved more directly and more concurrently by the customized appliance.

Elevating my standard of care

Our practice credo is to leverage technology to elevate the standard of care for our patients. The SureSmile 3-D diagnostic software tools sets have enhanced my ability to make better, informed treatment decisions that can be reliably delivered via the customized appliances and, in turn, have enhanced my ability to “do right.”

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