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Inside this issue

Beantown bound

This year's AAO Annual Session in Boston offers plenty to see, learn and do

From facial aesthetics through the ages to the discussion of early childhood treatment to the merits of cone-beam computer tomography, the 109th Annual Session of the American Association of Orthodontists, being held May 1–5 at the Boston Convention & Exhibition Center, promises no shortage of topics to debate, discuss and detail.

This year's meeting, built on the theme "Orthodontics Heard 'Round the World," features an array of leading clinicians and researchers — from Germany, Italy, Australia, Canada and the United States, among others — presenting their latest findings, along with an exhibit hall full of the newest technologies and products.

A typical street in Boston.

A few of the highlights include Dr. Anthony A. Gianelly on "Evidence-based Orthodontics" and Dr. Ravindra Nanda on "Achieving Treatment

Boston
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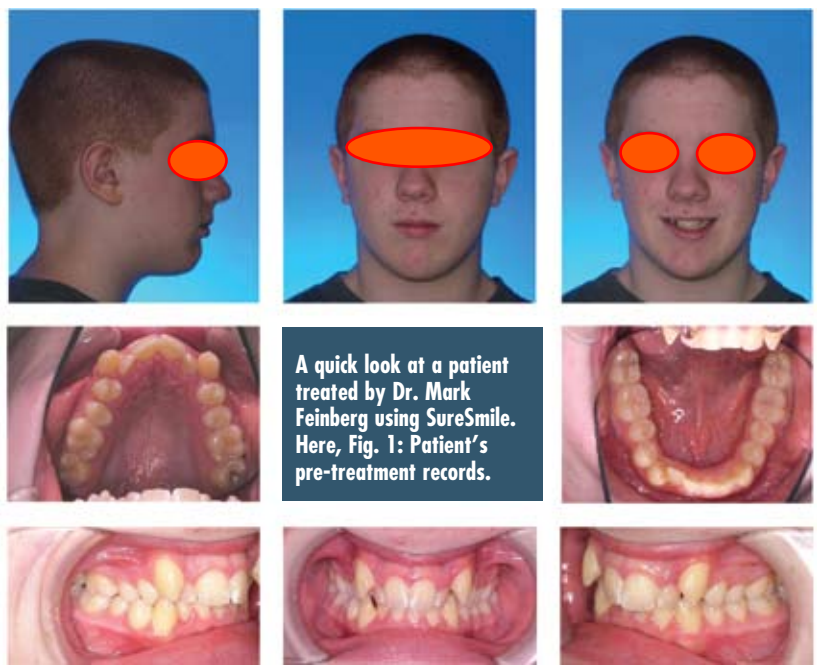
The age of digital imaging

Why you should choose SureSmile to lead the way into the 21st century

By Adam Weiss, DMD

Part 1 of 3



A quick look at a patient treated by Dr. Mark Feinberg using SureSmile. Here, Fig. 1: Patient's pre-treatment records.

Orthodontics is moving into the 21st century with digital and 3-D imaging. However, advancing one's mindset and practice into the 21st century can be a daunting process.

Selecting a technology to incorporate into your practice and deciding when and how to implement it are not simple decisions. One must select a company that can bring these new technologies to patients in useful, meaningful ways. Choosing the right provider is similar to choosing the right financial planner — it can be extremely rewarding or financially devastating.

This orthodontic practitioner of 18 years who has not yet placed a TAD, exposed a canine or gone completely paperless wanted to move toward the future.

In October 2006, SureSmile was chosen to lead the practice into the 21st century and thus, as the first orthodontist in Pennsylvania to do so, instantly created a cutting-edge practice persona for our patients and community. Part I of this article will elucidate the reasons for making this choice.

Dr. Mark Feinberg, an early user and pioneer of SureSmile, will present Part II of this article, in which he will present more in-depth technical aspects of the SureSmile software.

Along with the two parts of the article, cases treated with SureSmile will be presented (Figs. 1–17).

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What is SureSmile?

SureSmile is the first and only system to integrate digital imaging, computer modeling, robotic technology and high-tech materials into a start-to-finish orthodontic treatment process. This new system is the brainchild of Rohit C. L. Sachdeva, BDS, M Dent Sc, who serves as the chief clinical officer at OraMetrix, the company that provides SureSmile technology and the accompanying services. Dr. Sachdeva is a pioneer in copper NiTi (Ormco) alloys, and it is his vision that has made SureSmile what it has become today.

SureSmile patients begin orthodontic therapy with a routine full banding procedure. After three to four months of leveling and aligning, the patient's mouth is scanned using an OraScanner.

The OraScanner uses non-invasive white light to capture images of the teeth to create a 3-D model of them. This step is the only patient appointment that differs from conventionally treated patients and takes 20 to 30 minutes in the office. An orthodontic assistant trained by OraMetrix staff performs the scan.

From this 3-D model, the occlusion is treated in the virtual world (on the computer). The software developed by OraMetrix to simulate comprehensive orthodontic treatment is a marvel and will be presented in greater detail by Dr. Feinberg.

While the setup of the occlusion is performed in conjunction with the company's digital lab technicians, the orthodontist has total control of the final result. The teeth are moved in the virtual world on the computer screen to completion. This information drives the SureSmile robot located in Richardson, Texas. This robot bends wires made of CuNiTi shape memory alloy to a level of precision well beyond human abilities.

The prescribed robotically bent wire is sent back to the orthodontist's office for placement in the patient's mouth as in a standard archwire change appointment. The gentle forces of the CuNiTi wire move the teeth precisely into the desired final position. This precision adds efficiency to the treatment, which, in most cases, results in shorter treatment time — typically by 30–40 percent.

My attraction to SureSmile

I was first introduced to SureSmile at a national meeting six or seven years ago. The intricate bends in the robotically bent wires appeared to be technically accurate. Few cases are ever completed in pure straight wire form, and it is not humanly possible to bend a wire as demonstrated — especially a NiTi wire.

Initially, the technology was fantastic, but I did not know any orthodontists who were using it. In the summer of 2006, OraMetrix invited me to visit its headquarters in Richardson. The company was in full operation with its digital lab, staff and orthodontist training facilities and fully operational robots. It was proved to me that OraMetrix planned to be around for a long time and was completely committed to the future of our profession.

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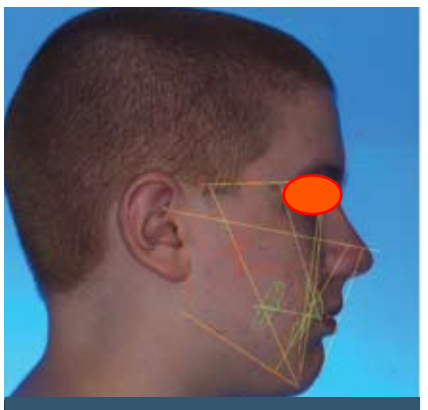

Fig. 2: Cephalometric view, pre-treatment.

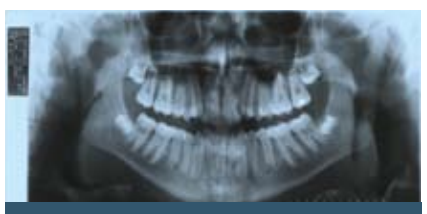

Fig. 3: Panoramic view, pre-treatment.

Fig. 4: Patient presents with a Class II division 1 malocclusion, moderate overbite, severe upper and moderate lower arch length deficiency. Upper lateral incisors demonstrated significant internal root resorption. The treatment strategy formulated involved extraction of the upper first premolar teeth as well as the upper lateral incisor teeth. Single tooth replacement implants were planned to replace the upper lateral incisor teeth.

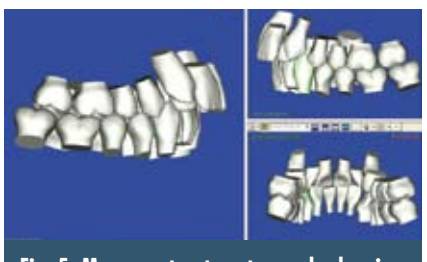

Fig. 5: More pre-treatment records showing Class II division 1 severe overjet and moderate overbite, severe upper and moderate lower ALD and internal resorption of upper lateral incisors.

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This high-tech system was consistent with my long-time belief that moving teeth was not about the bracket but about the wire. This does not imply that the technology is not an excellent choice for practitioners using modern self-ligating brackets because it is. For me, however, the bracket has always been a handle for the tooth, so the fact that SureSmile works with any bracket system was very appealing.

The idea of incorporating technology that can complete the treatment process in a shorter period of time also was very appealing to me. Shorter treatment time can translate into less oral hygiene risks, less overall discomfort for the patient and fewer visits to the office.

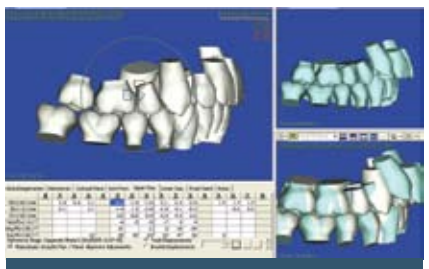

Fig. 6: A virtual simulation is performed to assess arch length needs and to assess the final occlusion. Module shows the right buccal view of simulated extraction of UR4.

Another valuable selling point was the ability of the software to quality score my treatment decisions with a virtual grading system. Instead of wondering whether treatment would meet quality standards after completion, I could now order a robotically bent wire designed to finish the case with high quality at the beginning of treatment. While this has not been put to the test to date, I plan on using SureSmile-treated cases during my personal recertification process.

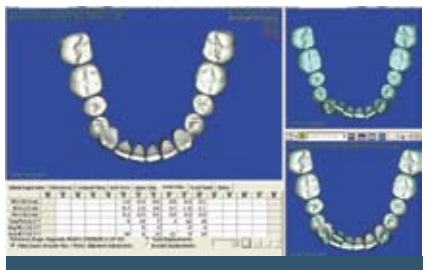

Fig. 7: An arch length analysis is performed on both arches. The lower arch as displayed reveals a deficiency of 3.0 mm. Based on the virtual diagnostic model setups performed, a determination was made to perform a non-extraction approach in the lower arch that would necessitate 3.0 mm of IPR based on maintenance of the lower incisor position.

Another factor in my decision to choose this technology was that I needed new challenges in my career, and this software fulfilled that desire. While there was a learning curve, the staff at OraMetrix was readily available in the training process. In partnering with SureSmile, I have the support of a company who has as a vested interest in my success with its product.

The staff and management team at OraMetrix are committed to the success of this technology. Dr. Sachdeva is inspirational and a true visionary in our profession. He is currently crossing the country offering free C.E.-qualified lectures on SureSmile technology. I encourage everyone to take advantage of spending a day with Dr. Sachdeva. My interaction with him and the

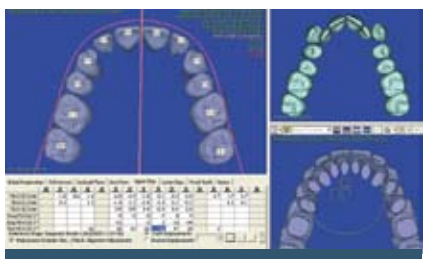

Fig. 8: Tooth size measurement and implant space.

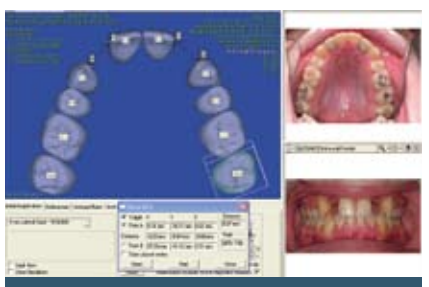

Fig. 9: A Bolton as well as a tooth-size analysis is displayed automatically and does not require the manual determination of these values.

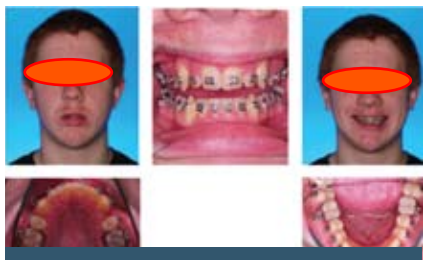

Fig. 10: June 9, 2006 — therapeutic scan six months from initial wire insertion.

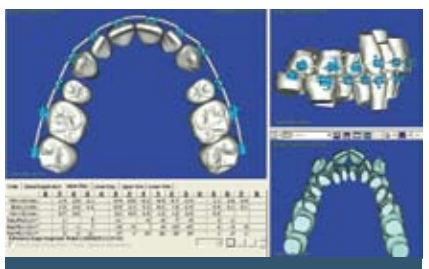

Fig. 11: Therapeutic scan timepoint.

Fig. 12: Comparison of the diagnostic vs. therapeutic timepoints reveals the degree of leveling of the curve of spee to date. Additional leveling was strategized in the setup plan stage, ultimately being designed into the SureSmile wire.

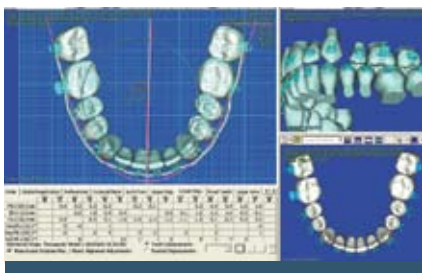

Fig. 13: A therapeutic scan is performed as a prelude to SureSmile wire creation, and additional higher level treatment planning is performed. The blue teeth represent the patient's progress to date, and the white teeth represent the changes that will be necessary to achieve planned treatment endpoints. In this instance, the highlighted numbers represent tweaking of the arch form and provide the necessary transverse modifications.

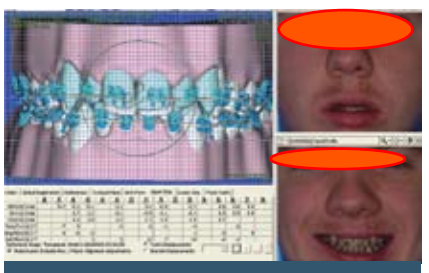

Fig. 14: The software grid calibrated in 0.1 mm increments is a valuable tool in planning the position of the anterior occlusal plane. In this case, more incisal show would be cosmetically preferable and, therefore, superior positioning of the upper anterior occlusal plane is planned.

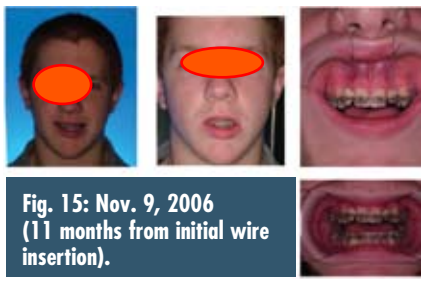

Fig. 15: Nov. 9, 2006 (11 months from initial wire insertion).

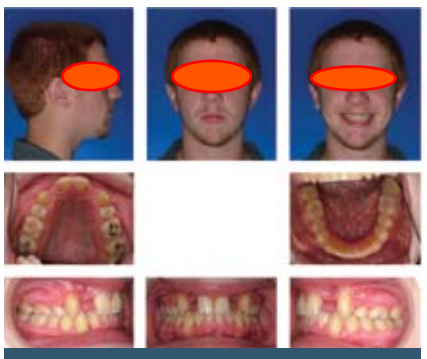

Fig. 16: Final records on Aug. 7, 2007.

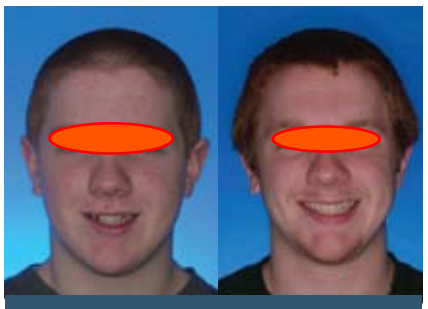

Fig. 17: Before and after.

input and shared experiences of other SureSmile users made my decision to implement SureSmile into my practice an easy one.

What about cost?

This seems to be a big hurdle for many colleagues if they only consider the costs — the expense of the equipment, a three-year commitment, the cost per patient, patients' willingness to spend more. SureSmile is an investment, not an expense.

The cost of a dental education is staggering today; the cost of the three-year commitment to OraMetrix is less than one year of tuition in some orthodontic programs. Learning to treat patients in the digital world with this system will serve an orthodontist for the remainder of his or her clinical orthodontic career, making the investment in SureSmile a bargain investment.

The cost of the equipment includes installation and training; the cost per patient can be passed on in the treatment fee. Many patients understand that new technology costs more. Plus, partnering with OraMetrix will keep you current with the latest and best technology in our profession. The latest upgrade of the SureSmile software introduced CBCT integration for the purpose of creating 3-D virtual models for treatment planning and appliance customization.

SureSmile by OraMetrix is definitely leading our profession into the 21st century.

OT About the author

Adam J. Weiss, DMD, is a 1988 graduate of Temple University School of Dentistry and received his certificate in orthodontics in 1990 from the University of Medicine and Dentistry of New Jersey. He is a diplomate of the American Board of Orthodontics and a member of the AAO and the Middle Atlantic Society of Orthodontists. Weiss is in private practice with offices in King of Prussia and Collegeville, Pa.

OT Contact

Dr. Adam Weiss
491 Allendale Road
King of Prussia, Pa. 19406
Phone: (610) 265-3034.
Fax: (610) 962-0192
www.orthodontists.com