_earn c.e. credit
Clinical and diagnostic advantages of 3-D imaging systems in dental specialties

_practice matters
The business of private practice orthodontics in the United States

_techniques
Lingual you will love: Capturing the incremental patient with lingual orthodontics
Welcome to ortho

The goal of this quarterly magazine is twofold. First, it seeks to share practical orthodontic knowledge that can be put to use in your day-to-day practice. Second, it is a vehicle to help you chip away at your continuing education (C.E.) requirements.

The amount of new information available in the orthodontic field about new products, techniques and research data is astounding. Running a practice and seeing patients leaves little time for catching up on the latest clinical news and product information. Thus, we hope ortho will not only be a welcome respite for those rare chunks of time you can devote to leisurely reading, but one that provides a practical return on your investment by providing information that you can actually put to immediate use.

In addition, we know that taking time away from the practice to pursue C.E. credits is costly in terms of lost revenue and time. As a quarterly magazine, ortho is here to help you chisel at least four C.E. credits per year out of your already busy life without the lost revenue and time away from your practice. To that end, every edition of ortho will include at least one hour of ADA CERP-certified C.E. credit where readers can answer questions about the materials at www.dtstudyclub.com to earn this credit. Annual subscribers to the magazine ($50) need only register at the Dental Tribune Study Club website to access these C.E. quizzes free of charge. In fact, even non-subscribers may take the C.E. quiz after registering on the DT Study Club website and paying a nominal fee.

If you are a practitioner with a penchant for words, it might also interest you to know that authors of the C.E.-accredited articles receive 15 percent of the fees collected from the non-subscribers who take the C.E. quiz online. The C.E. quiz for the articles in this edition will be available online on May 1.

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JSOP SCHEDULE

JSOP XVII
7/19-7/22, 2012 Session 2: Clinical Systems I
11/15-11/18, 2012 Session 3: Clinical Systems II
2/21-2/24, 2013 Session 4: Orthodontic Practice Marketing, Enrollment & Communication

JSOP XVIII
9/6-9/9, 2012 Session 1: The Business of Orthodontics

COURSE SUMMARY

SESSION 1: The Business of Orthodontics
- National Orthodontic Practice Statistics
- Integrated Systems Approach
- 17 Critical Factors
- Benchmarking
- Prioritizing System Corrections (Improvements)
- Strategic Planning
- Practice Monitors/Roncone Module

SESSION 2: Clinical Systems I
- Clinical Philosophy
- Brackets
- Wires
- Auxiliaries
- Bracket Placement
- Archform
- Stages of Treatment
- Finishing
- Orthodontic Results

SESSION 3: Clinical Systems II
- Diagnosis and Treatment Planning
- Phase I Treatment
- Treatment of the Adolescent and Adult Dentition
- Diseases of and Treatment of T.M.J.
- Hands-On

SESSION 4: Marketing, Enrollment & Communication
- Marketing Basics
- Who and Where is the Market You Want?
- Positioning
- Marketing Director, The Plan, Teams, Internal & External
- Enrolling New Patients
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Clinical and diagnostic advantages of 3-D imaging systems in dental specialties

Author_Dan McEowen, DDS

C.E. article_application of 3-D imaging

For nearly 100 years, dentists have relied on 2-D radiographic imaging for diagnosis and treatment planning. With the 1999 introduction of cone-beam computed tomography (CBCT), all dentists now have tools available for more accurate diagnosis and treatment.1 The ability to look at a tooth in any direction and orientation, as well as in 3-D, eliminates much of the guesswork commonly experienced with 2-D radiographs.

We have been limited in most cases to only a buccal-lingual view provided by periapicals, bitewing, and panoramic radiographs with the occasional axial view of an occlusal film. Medical CT scans and images began in the early 1970s and were sometimes used by dentists, offering our first multiplaner views.2

The adoption of 3-D cone-beam imaging is appropriate and has important advantages for all modalities of dentistry. From every specialist to the general dentist, the increased amount of radiographic information as well as increased accuracy will aid in the most sound diagnosis possible.

CBCT description

CBCT is a single or partial rotation of an X-ray source around the head, capturing X-rays on various flat panel arrays and sensors. The information is converted to a series of axial slices by computed tomography and stored as virtual anatomy in the computer.

With the use of sophisticated software, the dentist is able to view information in several different views, including: axial slices (head-to-toe orientation), coronal slices (front-to-back orientation), sagittal slices (side-to-side orientation) all known as multiplaner reconstructions (MPR). The thickness of each slice can be varied to include more or less information.

Because the voxels (volumetric pixels 3-D) are isotropic, other MPR images can be generated by slices drawn at any angle, curve or thickness through the scan to view areas critical to the final diagnosis.3,4

The final view offered by CBCT is a 3-D view that can be rotated and viewed in any direction.

Once again through software manipulation, 3-D
images can be viewed as conventional radiographs, maximum intensity projections (MIP), soft-tissue projections and a variety other views.

This nearly endless ability to manipulate the data aids in the diagnosis and identification of disease, nerve canals, sinus morphology, dental caries, bone density, fractures, endodontic pathology, implant placement criteria, periodontal defects, bone pathology, fractured teeth, iatrogenic trauma, TMJ morphology and disease, third-molar position and many more healthy or diseased conditions.

_Early CBCT adoption with implants_

The first and primary use of CBCT for early adopters was implant placement. As the scope and the value of the information became better known, dentists of all branches began to see the value of MPRs and 3-D renderings including periodontics, endodontics, oral surgery, treatment of TMJ, orthodontics, implantology and general dentistry.1,4

Clinical periapical and panoramic radiographs for the placement of implants can be misleading with elongation, foreshortening, superimposition and geometrically incorrect data.7,8 A look at the implant in the periapical shows no obvious disease to an existing integrated implant. Clinically, a buccal fistula was present with exudate and slight pain. The CBCT scan (Fig. 1) reveals a more accurate view showing a buccal defect on a sagittal MPR. A surgical flap revealed a dehiscence of the coating of the implant. Removal of the foreign body resulted in an asymptomatic and healthy patient.

The evaluation of the available bone for the initial implant placement can be crucial for the long-term success of the case. If there is inadequate bone available, grafting may be a necessity. CBCT studies render the most accurate information available at a low radiation dose. The periapical shows an obvious lack of bone height, but does not show the buccal-lingual dimensions or an accurate view of the sinus morphology (Fig. 2).

The MPR view of the CBCT shows all necessary measurements to perform the sinus lift and grafting with the immediate placement of the implant fixture (Fig. 3). Three-dimensional views show the floor of the sinus and any soft-tissue pathology (Fig. 4). Having accurate measurements in all dimensions is an advantage of CBCT scanning.

_CBCT and endodontics_

Endodontics is a field that is rapidly adopting the use of CBCT and for good reason. The inherent geometric deficiencies of 2-D radiographs make the CBCT scan a valuable adjunct to investigate the root morphology in both 3-D and MPR. The typical periapical will show superimposed canals in the anteriors, bicuspids and molars as well as unwanted bone densities both buccal and lingual to the affected tooth, making the image quality poor.

The ability to view MPR slices in cross-section, long axis and oblique directions gives the ability to follow all canals in any direction and show their relationship and measurements from other known structures. This virtual tour of the root morphology is a great benefit to the final treatment outcome (Fig. 5).3,4

---

Fig. 4. The 3-D CBCT showing anatomy of the maxillary sinuses.

Fig. 5. Axial MPR showing mesial buccal roots in first, second and third molars.
Post root-canal infection can be difficult to diagnose with the standard periapical. The endodontic fills may appear to be normal even though other clinical findings and symptoms are abnormal. The patient presents several months post root-canal treatment with pain on palpation and pressure and avoids this side of the mouth.

A periapical radiograph shows minimal pathology (Fig. 6). The roots appear to be filled and a small puff of sealer extends through the apex of the mesial roots. The distal root structure and fill appear normal. There is little indication of periapical radiolucency only a widening of the periodontal ligaments of the mesial roots.

A CBCT scan reveals a completely different picture. The coronal MPR reveals a short fill near the apex of the mesial lingual root and a large radiolucency (Figs. 7, 8) not visible on the periapical radiograph (Fig. 6).

Missed canals are difficult to see in a buccal-lingual projection of the periapical radiograph as one canal is superimposed on the other (Fig. 9). Often, as viewed in this radiograph, we see periapical pathology with an apparent normally filled canal. CBCT scans allow dentists to look for pathology in MPR planes to identify the actual problem before invasive procedures are performed on the patient. The axial view shows a lingual canal exists and is untreated. The coronal view confirms the diagnosis and treatment can be completed (Fig. 10).

Today’s endodontists, as well as general dentists, are benefiting from the diagnostic capabilities of the high-resolution CBCT scanners available over conventional 2-D periapical.

Oral surgery

Oral surgery, with its inherent invasive nature, can be better served using CBCT with MPR as well as 3-D images. The ability to perform virtual surgery is a benefit to both the doctor and the patient. Doctors have the advantage of seeing morphology and landmarks in real time and space with accurate measurements, and patients will gain a better understanding of the problems and the solutions their doctors are offering them.

Third-molar extractions can be risky based on 2-D and panoramic radiographs. These radiographs can often superimpose nerves and sinuses over root structures. Dentists using 2-D radiographs must often rely on experience to assess the risks of iatrogenic
trauma. The use of CBCT with MPRs and 3-D images reduces any guessing as well as the chance for any permanent damage to the patient. With the adoption of CBCT, the judgment is based on solid evidence and the risk will decrease.

A panorex of the superimposed third molars gave no solid evidence the canal lies between the roots. It is only with the use of CBCT and the MPRs that the nerve can accurately be seen traversing between the mesial buccal and mesial lingual root (Fig. 11).4,5

Other surgical advantages include the identification and the position of supernumary or impacted teeth. The images show accurate positions and show definitive morphology that will aid in removal of the proper teeth (Fig. 12). Knowing the exact position of many of these teeth is a benefit to both the doctor and patient. It will lead to the most precise surgical path and the least invasive procedure.

**Periodontics**

The explanation of periodontal problems are often misunderstood by the patient. As doctors, we talk about pockets, point to X-rays and propose treatment only to have patients refuse treatment because they do not understand what we are clinically describing. Using the 3-D portion of the CBCT scan can improve the understanding and acceptance of treatment plans.

The images are a picture of the problem that is owned by that patient and much easier to understand by the layperson. Illustrating periodontal defects and pockets allows the patient to better participate in the process (Fig. 13).

The MPRs and the 3-D projections aid in surgical planning for periodontists, allowing for accurate measurements and bone analysis prior to osseous surgery that doctors cannot get using the periapicals or panoramics.

Studies have shown that CBCT images are more accurate than panoramic radiographs. For the periodontist placing implants, the ability to measure bone density and avoid important anatomy is important.4,5

**Orthodontics**

Orthodontists are beginning to adopt large field-of-view CBCT. Recent studies show that linear measurements of bony structures are more accurate using CBCT and have less distortion than current methods of measurement: lateral cephalometric, posteroanterior (PA) and submentovertex (SMVT).5

Accurate measurements of tooth volume and tooth position can aid in accelerated treatment times and more precise treatment.

Along with tooth position, density of bone and size of arches, the orthodontist also has an accurate evaluation of the temporomandibular joint and position of the condyles. Impacted teeth are easily identified and position, either buccal or lingual can be confirmed prior to movement or removal.

Both MPRs and 3-D projections give the clinician a complete picture of the problems and the treatment course.

With a single CBCT scan, orthodontists can produce all of the information they need: panoramic, cephalometric, PA, SMVT, tooth size and volume, crowding evaluation in any plane, TMJ evaluation.
‘With a single CBCT scan, orthodontists can produce all of the information they need: panoramic, cephalometric, PA, SMVT, tooth size and volume, crowding evaluation in any plane, TMJ evaluation and airway analysis, all with both soft-tissue and skeletal information.’

and airway analysis, all with both soft-tissue and skeletal information.5,7

Conclusion

We treat our patients in 3-D, and now, with cone-beam computed tomography, we are changing the way we diagnose from 2-D to 3-D. The addition of this technology will increase your diagnostic skills with better and more complete information at your disposal. As with any type of invasive diagnostic tool, clinicians should weigh the risk to benefit in using CBCT scans.

Judicious use of CBCT and knowledge of patient’s lifetime doses should always be a consideration as well as the availability of other diagnostic tests appropriate for the problems of the patient. When adopting new technology, training is paramount. Along with training comes the responsibility of the doctor to read and diagnose information from CBCT scans.

Do not avoid CBCT from lack of knowledge; instead, take this opportunity to become a better diagnostician and radiologist. As you review radiology and pathology, your use of CBCT will aid in making the most accurate diagnosis and the most complete treatment plans._

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1. Ziman E, DDS, JD; White SC, DDS, PhD; Tetradi S, DDS, PhD. Legal Considerations in the Use of Cone Beam Computer Tomography Imaging. CDA Journal. 2010;138:49–56.

_about the author

Dan McEowen, DDS, is a 1982 graduate of Loma Linda School of Dentistry and has been in private practice for 26 years. He is a founding member of the World Clinical Laser Institute, achieving a mastership level of proficiency.

He has been active in the FDA approval of oral surgery techniques using erbium lasers. McEowen has lectured and trained internationally in techniques using lasers in general and specialty dental fields. He is a member of the ICOI and is active in implantology. McEowen has been involved in cone-beam technology for more than five years and owns 3D Imaging Center in Maryland.
The business of private practice orthodontics in the United States

Author: Chris Bentson, President, Bentson, Clark & Copple

Private practice orthodontic ownership in America is and will continue to be one of the best income producing vocations in all of dentistry and medicine. However, running a successful practice is increasingly complex and the path leading to financial success seems steeper than past years.

The winds of change and challenge vary in direction and intensity, but are relentless as they push practice owners to learn, adapt and implement the ideas, strategies and products necessary to stay competitive and clinically relevant.

This article will look at the current orthodontic market in the United States from the perspective of the practice owner. We’ll glance back at past norms, look at where we are now and discuss a few of the trends we’re seeing in the profession looking forward. Put your seat belt on, this can be a bumpy ride.

Doctor demographics

The U.S. Census Bureau reports there are about 312 million people living in the United States. To serve the dental needs of this population, the U.S. Department of Labor’s Occupational Outlook Handbook reports there are currently about 136,000 general dentists working in the United States. Orthodontists are the largest dental specialty group with a force of about 9,500.

Of the 65 orthodontic residency programs in the United States, the total resident enrollment at any given time is about 975, with about 360 residents graduating each year. Program length varies between 24 and 36 months.

Currently, 17 programs offer 24 months, 15 programs offer 30 months and 33 programs are in the 36-month range (each of these are ranges as some programs are 26 months or 33 months, as an example).

Growth in the number of programs, and therefore residents, has substantially increased in the last decade. Primarily, programs at Jacksonville, Denver and Las Vegas each started with an original class size of about 14 residents, though the University of Nevada has recently dropped back down to four residents per class.

In addition to these three large programs, the University of Southern Nevada in Henderson began in late 2008 and offers an MBA along with an orthodontic certificate, accepting 10 residents per year. Seton Hill University, in Greensburg, Pa., began a new orthodontic program in July 2010 and will graduate its first class of six in December.

Collectively, these new programs produce about 54 new orthodontists per year, an 18 percent increase in the number of orthodontists coming out per year compared with a decade ago.

This increase in the number of new orthodontists is currently intersecting with a larger number of pediatric dental offices bringing orthodontics in-house and an increasing number of dental clinics and corporate-managed dental offices adding orthodontics into their business model. In addition, recent economic times have caused many orthodontists to extend their careers, giving investment portfolios and retirement funds time to rebound, resulting in fewer practice owners retiring.

These factors have resulted in an aging orthodontic profession. According to the 2011 Journal of Clinical Orthodontics 2011 Practice Study, the current mean age of an orthodontist is 54, and he/she has been practicing for 23 years. Both of these statistics are 30-year highs.

As the profession ages, opportunities for practice purchases have remained scarce. One measurement of supply and demand is the AAO Practice Opportunities Services (POS), which reported 143 opportunities
for purchase or employment and 464 doctors seeking opportunities for purchase or employment at the end of last year. This roughly 3:1 ratio of buyers to sellers has moved down from a ratio of 5:1 in 2009 and 4:1 in the last half of 2010, as reported by the AAO POS.

Young orthodontists are necessarily seeking work where they can find it, often as an associate/employee of a general dental clinic or pediatric dental practice.

We expect the supply and demand of buyers and sellers to continue to move toward levels that are more equal over the next several years, thus improving the prospect for buyers to find orthodontic practices for sale.

_The economy and census data_

The recession that started in December 2007 and, according to economists, ended in May 2009, has been over for almost three years. However, the crawl out has been slow at best. Gross domestic product (GDP) posted an anemic 2.8 percent growth in 2010 and was backed up by another tepid performance of just under 3 percent in 2011.

While we have been technically out of a recession since mid 2009 and have thus far avoided a double-dip, consumers are more conservative, saving more and looking for a bargain, especially the middle class.

The Wall Street Journal, in an article describing current consumer sentiment in January of this year stated:

"Retailers and consumer-goods companies alike grappled with a disappearing middle class in 2011. After years of caution following the stock market’s financial crisis swoon, the wealthy returned to luxury brands, benefiting retailers such as Saks, Inc. and Nordstrom Inc. At the lower end, dollar stores and discount chains profited as prolonged unemployment and economic uncertainty spurred the middle class to trade down.

That created a barbell effect, as companies that traditionally cater to middle-class consumers suffered. Gap Inc.’s profit declined 27 percent....and department store chain J.C. Penny Co. flipped to a $65 million loss for the first nine months of the year (2011)."

The recent 2011 JCO Practice Study seems to agree with the analysis above, as mean net collections for orthodontic practice owners reported a $10,000 drop from the 2009 study; from $960,000 to $950,000. Median case starts also decreased from 220 in 2009 to 200 in the 2011 study. Both of these drops were the first decreases in these measurements since the studies began in 1983.

These drops in means reflect the middle class struggle to get back on their feet. We have seen value-positioned practices grow and high-end boutique practices do well in the most recent year ended, furthering the idea that the current economic pain for the orthodontist is hitting the middle market practitioner.

Current U.S. Census Bureau data does reveal an expected increase in the population, which may provide some solace to orthodontic practice own-
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practice matters — staying competitive

ers. Particularly of interest to orthodontists are the 4,058,000 children born in 2000, the highest number of births since 1992.

These millennial babies are turning 12 this year, prime candidates for full phase adolescent treatment. Total U.S. population growth is predicted at 8.7 percent through 2020 and 8.3 percent from 2020–2030 with significantly high percentages of this growth concentrated in the Hispanic, Asian Pacific Islander and African American ethnic groups.

Financial lending

Even with little organic orthodontic practice growth and the increasing educational debt of residents, money is available for practice purchases or start-ups for young doctors. Local banks that are primarily asset lenders often have trouble underwriting orthodontic practice purchases.

But an array of cash-flow lenders that focus on dental transaction lending for both start-ups and acquisitions have teams that are aggressively seeking out and lending to young orthodontists.

Why? Because the performance of these loan portfolios is superior to most other types of loans these institutions underwrite. Orthodontics does and will continue to provide doctor/owners with an exceptional return on investments, and certain lenders understand and want to participate in this return in today's market.

Money for practice purchases for young doctors typically requires no down payment, repayment over seven to 10 years, with some programs being longer and often with a fixed interest rate.

Larger practice loans often require the seller to carry some of the purchase price in a note with many lenders agreeable to refinancing the seller portion after a year or two of timely payments and monitored practice performance of the new owner, thus allowing the seller to be fully cashed out within several years of the change of ownership.

Trends in orthodontics

Decrease in GP and dental specialty referrals

Several trends currently in process divert from the norms seen over the last 30 years. Chief among them is a decrease in the number of referrals from general dentists or other dental specialties.

According to data published by the JCO on practice studies completed from 1983 to 2011, general dental referrals accounted for 50 percent or greater of the total referrals for orthodontic practice owners for the years 1983–1999.

Since that time, this referring source has steadily declined, representing 41 percent of total referrals in the 2009 practice study and 40 percent in the recently published 2011 study. Referrals from other dental specialists also declined from 2 percent over the years from 1983–2009 to 1 percent of total referrals in the latest 2011 study.

This is believed to primarily be a result of the increase of pediatric dentists bringing orthodontic treatment into their practices.

Increase in internal marketing programs

As a result of a decrease in referrals form other dental professionals, practices have aggressively employed ideas and strategies to generate internal referrals. Patient referrals increased from 30 percent in the 2007 JCO Practice Study to 35 percent in both the 2009 and 2011 studies.

Our observation is that generating a program to increase internal referrals is a learned skill and demands a system or process that includes the entire orthodontic team to be most effective.

This is most easily accomplished by employing a consultant to help the practice learn how to generate referrals and implement a systematic approach to seek referrals from patients.

Increase in use of website and social media

A derivative of the drive to generate patient referrals is a push to increase the effectiveness of the practice website and communication with patients and prospective patients by using social media and networking tools.

Not so many years ago, having a website was the goal; today, practices that have learned to leverage their websites and other social media tools tend to show higher new-patient flow than those that do not and often higher numbers of case starts.

Abbreviated treatment times

For years, the average treatment time for full-phase orthodontic treatment stayed very close to 24 months. This length coincided well with payments that fit nicely within the family budget. In recent years, adoption of certain treatment modalities has resulted in a decrease in the average number of months in treatment for patients.

The 2009 JCO Practice Study reported average treatment times of 22 months, down from the traditional 24 months for the first time. Many practices report treatment times in the 15–18 month average range with the use of certain newer treatment modalities.

New approaches to fees and payment methods

With some practices experiencing shorter treatment times and some treatment modalities associated with per-case lab fees or higher cost of goods, treatment fees posted an increase of only three percent between 2009 and 2011, according to the
Dear Customers, Colleagues and Friends,

Last year at this time we at GAC felt the need and responsibility to share what we knew about the growing crisis in Japan. In the same spirit of Unquestionable Integrity and Mutual Respect, we offer this 2nd letter one year later.

We know the entire orthodontic community shares our respect and well wishes for the people of Japan. They have earned the world’s admiration for their composure, discipline and resilience in the face of a disaster of this magnitude. Now, the events in Japan on March 11, 2011 and the supply disruption that followed, are part of the collective history of GAC as a company, GAC’s associates and our loyal customers alike.

We are pleased to report at this point, that DENTSPLY GAC has turned the corner. Our supply line has been re-established and continues to improve with every passing week. Our Japanese supplier has opened a new factory outside the evacuation zone and is now approaching pre-crisis capacities. While things are not 100% normal, normal is on the very near horizon.

Before looking ahead, we must express our gratitude for our loyal customers. Many of you stayed with us this past year despite considerable inconvenience. Many more of you have reached out with encouraging words and expressed your desire to come back. In short, THANK YOU! You kept us moving forward when things were the most challenging.

Beside unquestionable integrity and mutual respect, another of GAC’s core values is Action Orientation. We have not been standing still this past year. We are determined to emerge from last year’s adversity a stronger and better company. To get products out to our customers faster, we began shipping certain product lines from an additional state-of-the-art Distribution Center. To help orthodontists grow their practices, we have partnered with experts such as The Pride Institute and Sesame Communications. To advance the art and science of orthodontics we are preparing for the full-scale launch of our GCARE Education platform and the highly praised CCO program. When it comes to speed of innovation, we have resolved to control more of our destiny by bolstering our R&D efforts. In 2012, we are investing heavily in new product testing facilities, equipment and most importantly, in additional talented engineering professionals.

As we look forward to reuniting with many of you at the 2012 AAO in Hawaii, we cannot help but recall a story from the same event in 2011. An orthodontist friend recently recounted overhearing GAC’s leader Howard Bowne speaking to his counterpart at a competitive company. The orthodontist was struck by the oddity of hearing that GAC would be directing customers to the competitive company due to the supply disruption and would they “please ready capacity.” What this orthodontist did not hear was Howard’s parting words, which were “these customers are only on loan and we intend to earn them back.” At AAO 2012, we would like to show you, our customers, that the loan term is up and it is time to come back home.

GAC’s 2012 AAO theme is “Aloha Again.” Aloha is a very important Hawaiian word with multiple meanings. The literal meaning of Aloha is “the breath of life.” Aloha Again, is our invitation for long-time customers, new customers, strategic business partners and friends from across the industry to celebrate and renew our relationships in the relaxed culture of Hawaii.

Kindest Regards and Aloha Again,
Your Friends, Colleagues and Business Partners at DENTSPLY GAC
The top five trends in orthodontics:

1) Decrease in GP and dental specialty referrals
2) Increase in internal marketing programs
3) Increase in use of website and social media
4) Abbreviated treatment times
5) New approaches to fees and payment methods

JCO practice studies, which is the smallest increase in 30 years.

Additionally, the current economic environment is making it difficult to increase fees while asking the consumer to pay for the fee in an abbreviated amount of time. The use of automatic monthly payment services has greatly increased over the last five years, and some practices are choosing to allow patient contract lengths to extend beyond estimated treatment lengths if certain requirements are met (often either a credit check and/or the insistence of automatic payment method).

There are certainly a number of other trends currently occurring in orthodontics. As the landscape evolves, practice owners are well served to stay ahead of the curve wherever they can.

Our observations are that consultants are a great help to practice owners. Consultants see dozens and sometimes hundreds of practices per year and can bring transferrable concepts that owners can implement as they address a changing consumer and market.

It is also more important than before for practice owners to monitor key operational and financial metrics with more scrutiny than perhaps they have in the past. This effort will help identify areas in the practice that need attention and allow practice owners to make better and earlier decisions as they operate in the current environment.

As stated at the beginning of this article, “Private practice orthodontic ownership in America is and will continue to be one of the best income producing vocations in all of dentistry and medicine.”

Stay focused, be aware of the trends and changes and keep your seat belt on. The ups and downs of practice ownership are not for the lazy or faint of heart, but the results are enormously rewarding.

Reference


_about the author

Chris Bentson has been working with orthodontists regarding the business aspects of their practices for more than 23 years.

He is currently the president of Bentson Clark & Copple based in Greensboro, N.C. Bentson also serves as editor in chief of the Bentson Clark reSource, a quarterly newsletter focused on the business aspects of running a successful orthodontic practice.

He is a frequent guest lecturer, most recently presenting at the invitation of the AAO at the 2011 AAO Transition Seminar in Chicago. He has personally visited more than 1,000 orthodontic practices in the United States, Canada and Australia. He may be reached at (800) 621-4664 or via e-mail at chris@bentsonclark.com.
Somewhere along the way, Facebook stopped being social. Oh, you can still go there, chat with your friends and plan your weekend. You can still “like” pictures of your neighbor’s new puppy and stay up-to-date with your high school friends.

However, you can also go there, chat with suppliers and plan your next major purchase. You can “like” that secret sale your favorite store is having and stay up-to-date with the companies your high school friends are now running. Right before our eyes, Facebook grew up.

To anyone who’s paying attention, it’s obvious that Facebook has transcended the concept of “social media” and has in reality become “business essential.”

The facts bear this out. Facebook now has 845 million users, including more than 60 percent of active online U.S. consumers spending an average of seven hours a month on the site.

This is the type of reach and frequency that marketers would have killed for in the past. These figures emphasize the power of social media to create interactive dialogue.

It’s no secret that running an orthodontic office, and actively engaging with patients on Facebook, can be challenging without support. Nevertheless, the new business landscape and reach of Facebook make it essential.

To lend a helpful hand, here are 52 weeks of Facebook orthodontic posts for your practice. You can use these posts to start or enhance the conversation with your patients online. Remember to personalize each Facebook post and include a link, photo or video to support the topic.

1) January 24 is Parent’s Day. Dr. [insert name] would like to thank [his/her] parents for all they have done. Tell us why you are thankful for your parents.

2) In-Ovation® C clear braces are a great way to get your teen excited about correcting his/her bite and teeth alignment issues. Because they’re clear, friends and family won’t even notice they have braces on! Give us a call at [insert telephone number] to learn more.

3) Join us today for our 4th annual [insert practice name] blood drive. We donate because we believe it’s the right thing to do. Why do you give blood?
Don’t Look Back
Join the Movement Towards No•Trace Treatment

If you’re an orthodontist who is looking for a unique way to differentiate your practice from the competition, then the MTM® No•Trace™ System may be just the thing you’re looking for. Unlike traditional orthodontics, this new treatment category from DENTSPLY International is designed to correct the most common minor anterior misalignments seen in adult patients. It’s an easy-to-implement option that offers you a unique opportunity to expand your practice into an already mature—and highly profitable—market segment.

The Idea Behind the Movement
The MTM No•Trace System utilizes an all-but-undetectable lingual treatment that works behind the scenes to deliver a highly esthetic treatment. Because it’s indicated for patients requiring up to six millimeters of minor anterior correction, you can offer your patients an impossibly fast procedure that delivers rapid results. In fact, treatment can be completed in as little as 12-24 weeks. And because there’s no action required by the patient, compliance is nearly effortless.

The key piece of hardware in the MTM No•Trace System is the In-Ovation L, self-ligating bracket. Engineered for predictability, the easy-to-bond lingual brackets are redefining how clinicians think about lingual treatment.

One of the most difficult tasks clinicians face when working lingually is tying in the archwire. In the past, you might spend an hour or more to do one, or maybe even two arch changes. With the MTM No•Trace’s self-ligating brackets, the process is fast and efficient.

Most orthodontists find that placing MTM No•Trace System brackets and archwires typically takes no more than 30 minutes when bonding directly. If you’re not comfortable bonding lingually, a convenient indirect

The Advantages of MTM® No•Trace™ System

• Fast, easy placement with direct or optional indirect bonding.
• Rapid wire engagement with self-ligating brackets.
• Eliminates compliance issues that can undermine a successful clinical outcome.
• Minimal wire changes that can consume chair time and undermine profitability.
• Small, low profile brackets for maximum patient comfort.
The MTM® System is designed to treat the mild-to-moderate minor anterior alignment cases pictured below.

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<tr>
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<th>Space Closure</th>
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<tr>
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<tr>
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<td>(Lingual/Facial)</td>
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<th>Rotation per Anterior Tooth</th>
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<td>Extrusion per Tooth</td>
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option is also available. You can either set the brackets yourself, or you can utilize the state-of-the-art MTM® Service Center, which can include the initial Sentralloy archwire with your transfer tray.

So who are the patients who would be most interested in MTM No•Trace? Teens and young adults who desire a quick and efficient solution to cosmetic and/or relapse needs are an obvious target. So too are adults who are in the public eye, or whose physical appearance might have a direct impact on their career. Athletes, athletic types and weekend warriors who might get “knocked around” in the course of life are another group that can appreciate the benefits of the MTM No•Trace system. The truth is, because MTM No•Trace is so easy-to-use, it’s really the ideal choice for any patient that cares about how they look—both during and after treatment.

If you’re looking for a way to differentiate you and your practice from the competition, visit mimnotrace.com or contact your DENTSPLY Sales Representative about the benefits of offering the MTM No•Trace System.
4) It’s Valentine’s Day. The average woman smiles approximately 62 times a day compared to men who only smile 8 times a day. Guys, will you remember to smile at your lady today?

5) Dr. [insert name] just got a haircut. What do you think of the new style?

6) Congratulations to our patients [insert names] on opening their new shop in town at [insert location/address]. Can’t wait to stop by and check things out!

7) Celebrate National Children’s Dental Health Month in February. We are giving away $100 gift card to Toys “R” Us. Tell us how your children take care of their dental health and you could win.

8) [Insert practice name] tip of the day: Leave a toothbrush at work in your desk so you can brush your teeth after lunch. What’s your favorite way to keep your mouth feeling fresh during the day?

9) Check out our page on www.realself.com at [insert direct www.realself.com practice profile link] to see what the discussion is all about as it relates to orthodontic treatments.

10) “A laugh is a smile that bursts.” ~ Mary H. Waldrip

11) February 28 is National Tooth Fairy Day. Losing baby teeth can be traumatic. There isn’t much that can make it better than the smiling, caring Tooth Fairy! What do you think the Tooth Fairy looks like?

12) Guess whose [insert practice name] team member smile this is. [insert image of a team member’s smile].

13) Did you know we have a mobile-enabled website? Check it out at [insert website address] on your mobile phone to quickly get our dentist and team bios, map to our office, important links or click to call our office.

14) Have you flossed your teeth today?

15) Today we are featuring our Team Member of the Month, [insert name], our [insert title]. [Insert name] has worked in orthodontics for more than [insert number] years and [insert he/she] ensures we always provide top-quality care and customer service to our patients. How have you interacted with [insert name]?

16) Don’t forget! If you “Check In” at our office on Facebook, you could receive a $20 Starbucks gift card. Try it!

17) We have QR codes up in our office. Check them out next time you are here and be sure to scan them all. If you find the right one, you’ll be entered to win a $100 shopping spree.

18) Our [insert staff member’s title] [insert staff member name] just had a baby. Congrats to [insert name] on [insert her/his] new bundle of joy, [insert baby’s name]!

19) For your convenience, our practice website now offers secure online payment options. Just click the “Patient Login” button on our website at [insert link to patient login].

20) Would you like to be the face of [insert practice name]? We’re producing a new TV commercial, and we are looking for a patient to be the face of our
Facebook has transcended the concept of ‘social media’ and has in reality become ‘business essential.’

practice. Just submit a video on our Facebook Fan page telling us why you’d be the best. Videos must be received before [insert date].

21) It’s Take Your Child to Work Day. Today Dr. [insert name]’s [insert son/daughter] is shadowing [insert his/her] [insert dad/mom] in our office. [Insert he/she] wants to be an orthodontist one day. What are you doing on Take Your Child to Work Day?

22) Would you rather have perfect: teeth, eyesight or hair? According to Glamour Beauty, 44 percent say teeth.5

23) What’s the best joke you know? One that makes everyone smile. Post clean jokes only!

24) What are you smiling about this weekend? According to a recent study, folks with big smiles may actually live longer than those who don’t smile as big.6

25) Moms help with our homework. They cheer us on and fix our boo-boos. Moms can also be our chauffeurs, our cooks, the one who picks up after our messes and so much more!

We want to recognize one mom with a $100 gift certificate to [insert name of local spa]. Tell us why your mom deserves this day of pampering by [insert date] to win (for your mom that is!).

26) We know our patients prefer different methods to help them remember their appointment. For your convenience, we offer e-mail, SMS text and/or voice reminders (or all three). You can even manage your preferences through our website at [insert link to patient login].

27) We recommend that a toothbrush be kept at least six feet away from a toilet to avoid airborne particles resulting from the flush.8 Where do you keep your toothbrush?

28) Did you know Dr. [insert name] is a member of the American Association of Orthodontics and a board-certified orthodontist? AAO member professionals stay one step ahead of their peers by keeping informed of market trends.

They learn how the latest products and technologies benefit the patient. By selecting a board-certified orthodontist, you know you’re receiving the most up-to-date and best orthodontic care available.

29) We are putting together care packages for overseas military. We’ll be including toothbrushes, floss, toothpaste and more. If you’d like to include anything in our care packages, please let us know.

30) Today Dr. [insert name] and [insert his/her] spouse, [insert name], are celebrating [insert number] years of marriage. Congratulations! Anyone else celebrating a birthday or anniversary this month?

31) "If you see a friend without a smile, give him one of yours.” ~ Proverb

32) Our office now offers a massaging chair, aromatherapy and warm towels during your appointment. What do you think of that?

33) Floss picks or traditional floss?

34) Today is National Junk Food Day! Don’t forget to brush and floss your teeth, and don’t forget to wash away the junk food stuck between your teeth.

35) Click “Like” if you brush your teeth after lunch!

36) In France, the Tooth Fairy is a mouse!

37) We’re having a website scavenger hunt. Go to our website at [insert website address] and find the answers to these four questions:

A) [insert question] B) [insert question] C) [insert question] D) [insert question]. Send your answers to us at [insert email address] and you could win a $25 gift card.

38) Are all braces the same? No way! Read why Dr. [insert name] chooses to use In-Ovation® System braces for you and your family [insert link to web page].

39) We use environmentally friendly methods and materials wherever possible, while minimizing waste and energy. Our toothbrushes are even made of recycled yogurt containers! What do you do to stay environmentally friendly?

40) It’s Halloween, and we want to buy your candy! Our goal is to collect 300 pounds. We’ll be accepting candy all week long. $1 per pound of unopened
candy. We’ll be sending all candy to service people overseas.

41) This month, we are pleased to present [insert patient name] as our Smile of the Month. Visit our blog to learn how [insert his/her] smile was transformed with Invisalign, the clear way to straighten your teeth [insert link to onsite blog].

42) Did you know we always have someone on call in case an orthodontic emergency arises? Just call our practice at [insert telephone number]. We are here to help.

43) Today is our 10th annual food drive. We are in need of pasta, cereal, peanut butter, baby food, toilet paper, canned tomatoes, vegetables or anything you have that is not perishable. Thank you for helping us feed our hungry neighbors.

44) According to a study at DePauw University in Indiana, people who smile often are more likely to have healthy marriages! Do you agree or disagree?

45) We’re celebrating Silly Hat Day. Wear your silliest hat to the office today, and you could win a $25 Starbucks gift card!

46) The Go-To Mom, Kimberly Blaine, educates us on how the Invisalign treatment helps you achieve that perfect smile. Get the facts in less than four minutes.

47) Believe it or not, smiling boosts your immune system! See more interesting facts about smiling at www.pickthebrain.com.

48) We’d love to wish you happy birthday on your special day with an e-mail greeting. Be sure to send us your email address so we can remember your special day.

49) Has your experience with our office been great? Leave a review for us on Google! It only takes a minute, and we greatly appreciate your feedback [insert link to Google places listing].

50) We just hit [insert number] fans here on Facebook. Hoorah!

51) See what Wikipedia has to say about “orthodontist.”

52) You are never too old to have a beautiful smile, and we can help. Make it a New Year’s resolution by calling our office at [phone number].

To download 365 days of Facebook posts, please visit www.goo.gl/cWMWp

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6. “Life span may be as wide as your smile,” Los Angeles Times.
7. www.funfactz.com/health-facts/dentists-have-recommended-that-toothbrush-be-kept-1688.html
8. DePauw University Study by Dr. Hertenstein.
10. www.pickthebrain.com

About the Author
Rachel Mele is the director of business development at Sesame Communications. As a member of the Sesame Speakers Bureau, she speaks and writes regularly on Internet technologies, including search optimization, social media and effective web marketing.

Mele’s data-rich presentations make the complexities of dentistry in the digital age easier to understand and manage. Mele is an accomplished Toastmaster and the VP of public relations for her local club in Wallingford, Conn. Mele can be reached at rachel@sesamecommunications.com.
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Lingual you will love

Capturing the incremental patient with invisible orthodontics

Author: Ronald Roncone, DDS, MS

Lingual orthodontics is not new in the world of orthodontics. Crude attempts at lingual orthodontics were tried many years ago. The first true lingual began almost simultaneously about 1980 with Dr. Kurz of California and Dr. Fujita of Japan.

Patients around the world were hungry for an appliance that would give them straight teeth but could not be seen. Because of the potential commercial windfall, various companies entered the marketplace.

In the United States, many orthodontists immediately jumped into this new area only to realize that working with braces on the inside of teeth was not nearly as easy as it was when they were attached to the outside surfaces of teeth.

Due to the steep learning curve, the general acceptance of braces by U.S. citizens and the improvement in clear braces, lingual orthodontics disappeared, with a few notable exceptions. Meanwhile, those orthodontists outside of the U.S. worked on mastering lingual and making slow and steady improvements to the various techniques.

Some common statements arose from the initial experience with lingual orthodontics.

- Lingual orthodontic treatment takes longer.
- Results of lingual treatment are not as good as labial treatment.
- Lingual treatment is too hard on the orthodontist because of the poor postural positions required.
- Patients do not speak well with lingual braces.
- Tongue irritations are a constant problem for lingual patients.
- Patient visits take substantially longer with lingual braces.
- The time required to master lingual treatment is not worth the effort.
- It is too difficult to tie-in archwires.

Each of these statements has some element of truth in them, yet all can be refuted. This article will attempt to address all of these statements. However, even if they could not be totally refuted, one overriding factor remains: Patients want “invisible” orthodontics!

For many years, the most-used bracket in lingual orthodontics was the Kurz bracket (Ormco). It was a solid, well-conceived bracket that went through seven generations. The bracket basically remains the same as it was nearly 20 years ago. Other lingual brackets have been developed over the years, but most of the improvements have come in the area of precision placement of the brackets. Clinicians such as Takemoto, Scuzzo, Fillion, Wiechmann and others have made significant contributions in this area.

Several years ago, the biggest leap in development was the size of brackets conceived by Drs. Takemoto and Scuzzo. The bracket was very small and targeted the anterior teeth commonly referred to as the “social six.” Interest is again building for use of the lingual...
bracket as part of an orthodontist’s offerings to his or her patients due to the high demand for an invisible solution.

Yet, with all the improvements, lingual orthodontics remained difficult. For the patient, speech problems could be overcome, but it was not a quick or easy adjustment. Patients also took a long time getting used to the tongue irritations. Gingival hyperplasia was also a common problem.

Even when the orthodontist mastered the “mechanics” of lingual, it was still difficult to ligate the wire to the brackets. Wire tying stainless-steel ligatures to each bracket or using special ties, such as the “double over” tie, were very time consuming and difficult. With these thoughts in mind, the next stage of lingual treatment necessarily led to lingual self-ligation.

Several years ago, in conjunction with GAC, we began the development of the In-Ovation “L.” It is currently in use in many areas of the world. The bracket is small: 1.5 mm in thickness and 2.2 mm in width. The clip is very easily opened and closed, which eliminates the difficult and time-consuming task of wire tying or placing elastomeric modules.

The same basic philosophy of light wire treatment that is part of the In-Ovation “R” and “C” protocol can be used on the lingual. With all of these advancements in technology, the highest degree of quality still requires indirect procedures for full lingual. Many excellent methods of indirect are currently available.

As an offshoot of this self-ligating bracket (SLB), it is very easy to treat simple cases requiring no basic changes in occlusion with the MTM® No•Trace (MTM = minor tooth movement) System. Mild to moderate crowding of the anterior teeth can be easily treated in a matter of weeks. All of the cases that our office has treated have been completed within the six-week to 4.5-month period. Most of these are under 10 weeks.

MTM No•Trace utilizes a reduced base size and is designed to address these simple cosmetic cases. The
reduced base allows the clinician to place the bracket near the incisal/occlusal edges of teeth, thereby eliminating any gingival irritation problems. It allows clinicians to correct minor misalignments with minimal office and chair time, incorporating only a simple round-wire treatment.

Almost every day, a patient’s parent expresses his or her desire to have straight teeth, but expresses that he or she does not want to show braces and doesn’t want it to take very long. Some of these patients had braces years ago, did not continue to wear retainers and subsequently developed crowding of the anterior teeth. Most of these people have good to excellent posterior occlusions.

Others never had braces but have continued to get crowding of teeth over the years. In the past, I would
attempt to correct these problems with retainers. The problem was that most people did not wear these retainers enough to obtain the results desired.

Their treatment would continue on for many months. This was frustrating both for the patient and me. The treatment also became a financial disadvantage.

While clear aligners have become popular, this was not the answer for me because of the excessive amount of time it takes at the computer planning for relatively simple treatment.

In addition, the expense of the aligners was also a concern that ultimately led me to look for a better solution.

In my opinion, the use of MTM No•Trace System has many advantages over retainers and aligners:

- Truly invisible.
- Very tiny (1.5 mm thick), which virtually eliminates tongue irritation.
- Minimal speech problems.
- They are not dependent on patient cooperation (other than proper brushing).
- Because they are placed near the incisal/occlusal edges of teeth, there is little gingival problem.
- They can be placed directly, therefore no laboratory fees are involved. For those who routinely do their own indirect bonding, you can continue the process if you so desire.
- Chair time is minimal at each appointment. There are no "re-ties." The light round wire continues to align teeth if left alone.
- 80 percent of patients require only one wire.
- The clips open and close easily with the tool provided or with an explorer (my choice).
- Depending on the country, province or state laws, placement and removal of archwires is easily a task that can be delegated to auxiliaries.

Certainly not all those who desire MTM No•Trace treatment are good candidates. Case selection is important. MTM No•Trace is meant as a cosmetic alternative only. Those patients whose correction requires root torque or uprighting are not good candidates.

However, those who desire alignment only, who might obtain "better" treatment if full-bonded appliances were placed, may still choose a compromise result if their current malocclusion is not worsened.

These patients must understand the unstable nature of the result and agree to lifetime retention. In addition, these patients should be fully informed of the limitations of such treatment and sign a potential risk and liability disclosure form.

**About the author**

After receiving his undergraduate degree from Marquette University, Ronald Roncone, DDS, MS, pursued graduate study in physiology and neuroanatomy at the Marquette School of Medicine while simultaneously earning his dental degree from the same university. His CV includes postdoctoral certificates from the Harvard School of Dental Medicine and the Forsyth Dental Center.

Roncone’s practice in San Diego, Calif., specializes in adult treatment (esthetics, surgical and TMD) as well as early treatment for children. He is a respected and frequent lecturer, having taught more than 500 seminars around the globe. His impressive list of technical innovations include long (eight to 12 weeks) intervals between patient appointments, which he introduced in 1989 through the use of titanium wires and the development of a unique prescription for bands and brackets.

He is widely known in the orthodontic community as the “Guru of Marketing.” Please visit him online at www.ronconeorthodontics.com or e-mail info@ronconeorthodontics.com.
Clinical Alliance for Research and Education

Where Care Comes From

Clinical—At the heart of all scientific advancement is a problem solved, which then becomes a scientific rule from which others can solve problems. Because at GCARE, we believe in the miracle of modern orthodontics, backed by the clinical certainty of modern science.

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The Clinical Alliance for Research and Education is at the root of the GCARE name and at the heart of what we do. More than an acronym, it’s our commitment to an idea that defines who we are. It’s about a dedication to pure science, the company we keep, the knowledge we uncover and way we share it. If you’re looking for a deeper understanding of not just what, but also how and why, look to scientists, teachers and leaders of GCARE. Because knowledge is nothing more than trivia... until you care.
# GCARE 2012 Course Schedule

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<td>Providence, RI</td>
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<td>Future Proof Your Orthodontic Practice</td>
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SENTALLOY: The story of superelasticity

Author: Alberto Teramoto, DDS

Part I: History and basic concepts

Introduction
Since the days of Angle, many technological advances in archwires have enhanced our specialty, increased our efficiency, reduced our chair time, and as a result, increased our profitability. However, because of the great number of nickel-titanium alloys that actually exist, it is important to understand the historical background as well as basic concepts about them in order to visualize and recognize the clinical potential they have in orthodontics. Although nickel-titanium alloys appear to be the same, there are many small differences in their composition and manufacturing process, which inevitably make the difference between ordinary and extraordinary NiTi archwires.

The beginning of NITINOL
Nickel-titanium alloys have been found to be the most useful of all shape-memory alloys (SMAs): They are metals that demonstrate the ability to return to some previous shape or size when subjected to an appropriate thermal procedure. In other words they “remember” their original shapes. Other shape-memory alloys include copper-zinc-aluminum-nickel and copper-aluminum-nickel, but they do not possess the combined physical and mechanical properties of nickel-titanium alloys.
NiTi is unique because of the force levels expressed when heated, its corrosion resistance, its biocompatibility, the ease with which the TTR can be set and the reasonable cost of fabricating a precise alloy. A metallurgist, Dr. William J. Buehler, doing research at Naval Ordnance Laboratory (NOL) in White Oak, Md., discovered the unique shape memory properties of this alloy. NITINOL is an acronym used to describe a generic family of nickel-titanium alloys. It represents the two main elements of this alloy — nickel and titanium (NiTi) — and contains a reference to where it was developed in NOL, Naval Ordnance Laboratory.

In 1958, Buehler was looking for a change in his professional career. An aerodynamics project at NOL was searching for the appropriate material for the re-entry nose cone of the SUBROC missile. Jerry Persh, the project manager, put Buehler to work assembling known property data on selected elemental metals and alloys that might be feasible.

Early in the developmental stages, secondary research on nickel-titanium alloys led to a significant application by Raychem Corporation. They produced a product called Cryofit, which was a hydraulic line coupler for the U.S. Navy’s F-14 aircraft. However, this was just the beginning of a wide range of new and exciting applications in medicine, dentistry and diverse engineering areas. Buehler retired from NOL in 1974 but remained involved in the development of NITINOL until 2005, at which time he moved to New Bern, N. C.

How NITINOL works
Exactly what made these metals “remember” their original shapes was in question after the discovery of the shape-memory effect. George Kauffman (Department of Chemistry of University of Fresno)
describes this process as follows: In a non-memory metal, the strain of deformation is absorbed by rearrangement of the crystals, and it is impossible to get the crystals back into the original position. On the other hand, in an alloy such as NITINOL the crystals stay in place: The atoms within the metal crystals rearrange themselves and the distorted objects revert to its original shape. There is no visible change in shape of the metal; all the changes occur at the atomic level.\(^2\)

NITINOL had phase changes while still a solid; these phase changes are named martensite (low temperature) and austenite (higher temperature). The range of transition temperature (TTR) varies for different compositions from about -50°C to 166°C by varying the nickel titanium ratio or ternary alloy with small amounts of other metallic elements. Under the transition temperature, NITINOL is in the martensite phase. In the martensite phase, this alloy can be bent into various shapes; the crystal structure is disordered body-centered cubic. To fix the "parent shape" (austenite phase), the metal must be held in position and heated to about 500°C.

The high temperature "causes the atoms to arrange themselves into the most compact and regular pattern possible" resulting in a rigid cubic arrangement known as the austenite phase; the crystal structure becomes that of an "ordered" cubic, frequently called a cesium chloride (CsCl) structure. Above the transition temperature, NITINOL reverts from the martensite to the austenite phase, which changes it back into its parent shape.

NITINOL in orthodontics

Another early application and probably the most important for the orthodontic world was the introduction of NITINOL into orthodontics as an archwire. In 1968, Dr. George F. Andreasen (Fig. 5) read...
an account of a strange alloy discovered at the Naval Ordnance Laboratory (now the Naval Surface Weapons Center). He contacted Buehler, who sent Andreasen a number of different NITINOL composition in different processing conditions. Andreasen did extensive clinical research and found one of these alloys worked most effectively; he called this alloy the “memory wire” because it returned to its original shape after being bent. Andreasen’s 1978 article was the first to use the terms “shorter treatment times,” “less patient discomfort” (light forces) and “fewer archwire changes.” The wire was commercialized by Unitek Corporation and trademarked as NITINOL, identical in name to what Buehler had called it.

The first commercially available wire was 50/50 percent nickel to titanium and was a shape memory alloy in composition only. Cold working by more than 8 to 10 percent suppressed the shape memory effect. Nevertheless, what made it attractive compared to the competitive wires available at that time was its light force (about 1/5 to 1/6 the force per unit of deactivation), and its increased working range allowed it to be used in more severely maloccluded cases without taking a permanent set.

Andreasen reported his research on the thermal dynamic effects of NITINOL in the Angle Orthodontist in April 1985. Andreasen’s work on NITINOL earned him the 1980 Iowa Inventor of the year Award. He died in 1989 at the age of 55. This was the very beginning of nickel-titanium wires for orthodontics.

SENTALLOY: The first superelastic NiTi alloy
In the meantime in Japan, Dr. Fujio Miura (Fig. 6), who is the most famous orthodontic professor in Japan’s history, was making basic research on the biology of tooth movement with the objective to establish the “ideal concept of tooth movement.” He was looking for a material or device that could deliver a constant and continuous force, and research was initiated to find a material that would satisfy this requirement.

In 1982, Miura and his university team made an offer to TOMY Incorporated (manufacturer of orthodontic products) and Furukawa Electric Co. (supplier of wire material) to do joint research on a new superelastic wire (Fig. 7). This new wire was characterized by its ability to generate optimal force for tooth movement and about 8 percent stress-induced martensitic transformation (superelasticity). This new NiTi alloy was launched in 1985 under the trade name of SENTALLOY (superelastic nickel-titanium alloy) (Fig. 8).

SENTALLOY had the features of superelasticity and shape memory. Miura5 describes these unique properties as follows.

**Shape memory**
Phenomenon occurring in an alloy that is soft and readily amenable to change in shape at low temperature but can easily be reformed to its original configuration when heated to a suitable transition temperature.

**Superelasticity**
A phenomenon that occurs when the stress value remains fairly constant up to a certain point of wire deformation. This is produced by stress, not by...
34,010,344...

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temperature, and the phenomenon is called stress-induced martensitic transformation.

Miura said that SENTALLOY allows a constant force to be delivered over an extended portion of the deactivation range and is therefore more likely to generate physiologic tooth movement and greater patient comfort. Using the body temperature to transform this alloy, SENTALLOY can address tooth movement resistance during an orthodontic treatment without causing trauma to surrounding dental tissues.

Miura believed that the discovery of the “superelastic” properties of SENTALLOY wires and its use in osteoclast recruitment was a significant scientific breakthrough for the orthodontic specialty. The use of superelastic wire established a new standard of biologic treatment in clinical orthodontics.6

Part II: SENTALLOY historical overview

For more than two decades, SENTALLOY archwire has found wide applicability in orthodontics and has developed products around the philosophy of applying physiological force for tooth movement.

• 1958, Dr. William J. Buehler began experimental work on NITINOL at U.S. Naval Ordnance Laboratory (Fig. 1).
• 1976, Dr. George Andreasen develops first NiTi alloy in orthodontics (Fig. 5).
• 1986, Dr. Fujio Miura develops SENTALLOY the first Super-elastic nickel-titanium alloy (Fig. 6).
• 1987, GAC International introduces the first superelastic open and close coil springs. (Fig. 9).
• 1988, DERHT method for bending SENTALLOY wire was developing under the trade name of ARCH-MATE (Fig. 10).
• 1990, NEOSENTALLOY appears, and it was the first time that was possible to use a full-size rectangular wire as initial wire that generates 100, 200 or 300 grams (Fig. 11).
• 1992, BIOFORCE is introduced as the only superelastic wire that starts with low, gentle force for anterior and increases to the posteriors (Fig. 12).
• 1993, GAC International creates Bioforce and NEOSENTALLOY IonGuard, a new nickel-titanium wire that underwent an ion implantation process (Fig. 13).
• 1993, SENTALLOY MOLAR MOVER is created for molar distalization (Fig. 14).
• 1995, TOMY Inc. introduces SENTALLOY STLH, a static thermoactivity low-hysterisis, nickel-titanium wire (Fig. 15).
• 2000, GAC PAKs enhances clean storage and dispensing of each wire (Fig. 16).
• 2008, high esthetic archwires: SENTALLOY and Bioforce. Providing the same outstanding performance as standard wires, a rhodium process provides low reflectivity for reduced visibility (Fig. 17).

Part III: Evaluation of mechanical and physical properties of SENTALLOY

There are basically three types of laboratory tests — bending, tension and torsion — used to study the mechanical properties of orthodontic wires. Two more tests are used to evaluate physical properties:
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differential scanning calorimeter (DSC) and X-ray diffraction.

Although these tests do not necessarily reflect the clinical situations to which wires are usually subjected, they provide a basis for comparison of these wires with others NiTi wires. And in all of the tests, SENTALLOY has proved its efficiency as the only biologically correct archwire. Some of this examples are next.

A) Three-point bending test
In order to demonstrate the difference between the first NITINOL wire (3M Unitek) and the superelastic nickel-titanium alloy (SENTALLOY) in 1986, a three-point bending test was introduced by Miura.\(^5\) This test was designed to clarify the relationship between the loading and deflection by determining the nature of the force being delivered during orthodontic treatment. This method is acceptable to demonstrate the springback properties.

During cantilever bending, the wires of good springback property will increase the length and the angle of the specimens, so a superelastic-like property appears even if the wire does not possess this feature. Instead, a three-point bending test was designed because this would accurately differentiate the wires that do not possess superelastic features.

At the same time, the three-point bending test actually simulates the application of wire force on the teeth in the oral cavity. The deformation of NiTi alloys is induced with martensitic transformation; this can be reversed by heating the alloy to return to the austenite phase and is transformed by reversing back to the previous shape; this is produced by temperature.

Materials
Wire specimen of 0.016 round wires was selected: stainless-steel, Co-Cr-Ni, work-hardened and NiTi SENTALLOY. In order to simulate oral cavity environment the wires and the steel poles were set in a chamber at 37°C. The midpoint of the wire was deflected 2 mm at speed of 0.1 mm/min, under a pressure from a metal pole 5 mm in diameter (Figs. 18, 19).

Findings
Both stainless-steel and Co-Cr-Ni wires showed a linear relationship when the amount of deflection was 2 mm and the load was around 1300 g (Fig. 20).

As the deflection was removed, both of them showed a permanent deformation. NITINOL load deflection curve was almost linear; when the deflection of 2.0 mm was reached the load was 790 g (Fig. 21).

When SENTALLOY wire load increasing ratio was 2.0 mm, the load was 650 g. However, when the deflection was decreased 1 mm from 1.6 to 0.6 mm, the load was decreased by only a small amount, namely, values around 250–350 g (Fig. 22).

By evaluating the test results, SENTALLOY wire showed superelastic property and was physiologically compatible to the tooth movement because it provided continuous force for a long period of time during deactivation.

B) Tensile test
According to Miura, superelasticity can be produced by stress, not by temperature difference, and is called stress-induced martensitic transformation. Uniaxial tensile testing was performed all specimens were stretched using an Instrom universal testing machine.
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From the first Straight Wire Appliance (SWA) of the 1970s through the Andrews Standard Rx developed by Dr. Ron Roth, to McLaughlin, Bennett and Trevisi modified the SWA Rx of the 90’s, CCO represents the best of what orthodontics has to offer. Based on my clinical experience, I have come to the conclusion that active, self-ligating brackets have a lot to offer to facilitate and therefore improve the delivery of our treatment.

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CCO System Rx Highlights

The CCO System Rx works as a comprehensive treatment protocol from second molar to second molar.

The following identifies specific segments in the arch where the CCO System Rx has adjusted values to meet the clinical outcomes desired. The transparent teeth in each illustration represents typical tooth position from alternate prescriptions. The solid tooth represents the adjusted values and tooth position of the CCO System Rx.

1. **U1: 12° Torque | U2: 10° Torque**: These values are optimal if full expression of torque is achieved. Thanks to the active clip, full expression can be achieved on a 0.019 x 0.025 ss wire. It is NOT necessary to increase/overcorrect these values.

2. **L1/L2: -5° Torque, 0° Tip, 0° Offset**: A small lingual crown torque overcorrection has been shown to help keep the incisors in an upright position when leveling and aligning and through Class II correction. 0° tip and offset makes it easier to interchange brackets, facilitating bracket inventory.

3. **U3: 10° Tip**: This values has the optimal angulation. The increased mesial crown tip found in some prescriptions (13°) has shown undesired distal tip of the U3 root, frequently seen in x-rays. However, excessive uprighting (8° or less) could compromise proper coupling with the L3 and could also leave spaces in the upper arch that, when closed, could prevent proper Class I relationship.

4. **L3: -8° Torque**: In many cases where the width of the maxillary and mandibular arches are normal, an excessive lingual crown torque (-11°), found in some prescriptions, makes proper coupling with the U3 difficult.

5. **U4/U5: -9° Torque, 0° Tip, 0° Offset**: Unique values are clinically insignificant, therefore the same values have been chosen, making them interchangeable providing bracket inventory flexibility.

6. **L4: 2° Tip | L5: -1° Tip**: Although this small difference of tip between the L4 and L5 will not be seen in non-extraction cases, it is significant in extraction cases to prevent “dumping” of the premolar into the extraction space.

7. **U6: -14° Torque | U7: -20° Torque**: Increased lingual crown torque, specifically for the second molar facilitates the correction of the curve of Wilson and therefore arch coordination, while minimizing the use of auxiliaries such palatal bars, etc.

8. **L6: -25° Torque | L7: -20° Torque**: These values have been selected to facilitate uprighting L6/L7 preventing them from rolling lingually.

*Note: Values of torque, tip and offset refers to the crowns. Positive values of torque and tip mean buccal while negative mean lingual. Offset values are indicated as M (mesial) or D (distal).*
Case Study

14 year-old male with a blocked canine, end-on molar relationship and midlines off. In-Ovation ‘R’ appliance was used with extractions of maxillary first Prm and mandibular second Prm. Minimum anchorage mechanics was used.

Treatment time 20 months. • Case treated by Dr. Secchi

Initial intraoral photos showing maxillary right canine ectopically positioned, end-on molar and canine relationship and maxillary midline off to patient’s right side.

Intraoral photos at the time the In-Ovation ‘R’ appliance was placed with an upper and lower .014” Sentalloy archwires. Initial alignment was done in 7 months through a sequence of three archwires: .014” Sentalloy, .018” Sentalloy and .020”x.020” Bioforce.

After spaces have been closed, arches have been coordinated and proper overjet and overbite have been achieved, upper and lower .021”x.025”. Braided finishing wires are used together with vertical triangular elastics for detailing and optimal coupling.

Finished case. Proper intercuspation, Class I molar and canine with proper overjet and overbite. Minimum anchorage mechanics allowed maintaining maxillary and mandibular incisors inclination while protruding mandibular molars to a Class I relationship.
Materials
Wire specimen of 0.016 round wire stainless-steel, Co-Cr-Ni, work-hardened and NiTi SENTALLOY were selected; they were attached to a steel plate with epoxy resin at 37°C. In this figure, Y-axis represents the force generated by the wire and X-axis shows the strain that the specimens were stretched (Fig. 23).

Findings
For the stainless-steel and Co-Cr-Ni wires, the elastic modulus was 17–22 KG/mm²x10. Showing very high values and a stress-strain curve to be almost straight during activation and deactivation phase. The elastic modulus of work-hardened NITINOL was 5–6 KG/mm²x10 and a stress-strain curve to be almost straight. Finally, in contrast, SENTALLOY showed a stress-strain curve of great significance that illustrates clearly the superelastic property.

When the wire was stretched it showed a straight curve. But when it reached 2 percent of its original length, it produced stresses of 55 to 58 Kg/mm² keeping those values until the strain was induced nearly to 10 percent (A to B). This diagram shows how the martensitic transformation begins at the 2 percent strain level and the transformation continues up to the 8 to 10 percent (Fig. 24).

When the martensitic transformation is completed, the whole specimen is transformed into the martensitic phase. When this occurs, the stress increases because of the elastic deformation. When the strain is removed (B to C), the stress decrease is linear because the elastic deformation occurs in the martensitic phase (Fig. 25).

Later, the martensitic transformation occurs again in the direction of the austenitic phase generating a continuous force (C to D) (Fig. 28). In the final step, the martensitic transformation is completed and the wire is again in the austenitic phase (D to E). This elastic deformation occurs in the austenite phase and the stress decrease is linear (Fig. 18).

The preceding metallurgical analysis indicates that SENTALLOY possesses superelastic properties (A to B range) and in the stress-strain curves (C to D range) (Fig. 19). The deformation of NiTi alloys and temperature changes induce martensitic transformations. These transformations are either stress (deformation) related or temperature related. Heating the alloy will induce the martensitic change (martensite to austenite) and removal of heat, cooling, (austenite to martensite) will return the wire to its original shape.

Bioforce
Miyazaki reported that a specific type of heat treatment (unlike the moderate temperature changes noted above) of SENTALLOY at 500°C would permanently and significantly alter the force plateau during unloading on a three-point bending test. This procedure created the possibility to manufacture SENTALLOY with three different levels of force. This same technology allowed a single wire size to have three different force levels. The optimal superelastic wire now offered light forces in the anterior section, medium force in the bicuspid area and a heavier force in the molar region.

In a three-point bending test, the superelastic properties of the wire become apparent in the molar region above a loading of 280 g (Fig. 29). At the premolar segment, the load/deflection curve reached a load of 180 g (Fig. 30). And the anterior segment the
wire demonstrated a superelastic plateau of 80 g (Fig. 31). It is possible to alter the superelastic characteristics of the wire in any desired section and apply an optimal force to each tooth with a single archwire.

This creates the possibility to obtain with a single archwire, the specific biological force to move specific teeth, with no patient trauma and fewer archwire changes (Fig. 32).

**Bioforce IonGuard**

To minimize friction, DENTSPLY GAC created a nickel-titanium wire that underwent an ion implantation process but did not affect the unique superelastic properties of Bioforce and NEOSONTALLOY. Ion implantation was originally developed for use in semiconductor applications. At low temperature, a high energy beam of ions are used to modify the surface structure and chemistry. The ion implantation is not a layer on the surface, therefore, it does not affect the dimensions or properties of the material and can be applied to virtually any material. Ion implantation improves wear resistance, surface hardness, resistance to chemical attack and, most importantly, reduces friction (Fig. 33).

Ryan showed that the ion-implantation process does reduce the frictional forces produced during tooth movement. This process tends to increase stress-fatigue, hardness and wear, regardless of the composition of the material.

The stainless-steel wire produced the least frictional force during in vitro tooth movement, followed by treated nickel-titanium, treated beta-titanium, untreated nickel-titanium and, finally, untreated beta-titanium. There were statistically significant differences in the amount of movement seen with the ion-implants wires compared with their untreated counterparts (Fig. 34).

Bedolla and Teramoto, in contrast with Ryan’s study, in an in vitro study reported that Bioforce IonGuard, which shows the smoothest surface (Fig. 35), generated the least frictional force, followed by stainless-steel and untreated NiTi, and the combination of Bioforce IonGuard with In-Ovation brackets showed the less frictional forces (Figs. 36, 37).

**Differential scanning calorimetry**

Over the past decade, differential scanning calorimetry has been used to study nickel-titanium archwire alloys. In conventional DSC, two small pans, one containing the material to be analyzed and the other an inert reference material, such as indium are heated at the same rate, typically 5°C or 10°C per minute.

The changes in the thermal power difference for the two pans are related to changes in the heat capacity. It is useful for studying phase transformations in the nickel-titanium archwire alloys.

There are important phase transformations for nickel-titanium alloys: Temperatures at which the transformation from cooling begins, martensite-start (Ms); temperature at which martensite peaks or is finished (Mf or Mf); temperature at which austenite begins, austenite start (As); and temperature at which austenite peaks or is finished (Ap or Af).

In some cases, an intermediate R-phase (Rhombohedral crystal structure) may form during this transformation process.

Bradley et al. to clarify the differences in the phase transformation for major types of nickel-titanium wires, performed a DSC study, the results of which follow.
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*Based on an average case load of 150 patients and an average 2 year treatment time.
Material
Wires tested: Four different Upper 016×022 NiTi archwires were tested — NITINOL-SE (3M UNITEK); Copper-NiTi 35 (ORMCO); NEOSENTALLOY F 80 (DENTSPLY GAC International); Bioforce-SENTALLOY (anterior section) (DENTSPLY GAC International)

Equipment
Differential scanning calorimeter (DSC) for measuring the austenite transformation temperature (Af point) was performed using a SII-DSC6220 Seiko Instrument (Fig. 39) and a thermal analyzer LN2 vessel was connected to DSC for cooling (Fig. 40).

Oral temperature
Sublingual temperature is routinely used as an indicator of oral temperature. It is approximately 37°C for most individuals, while not forgetting that many factors have been shown to affect the temperature in the oral cavity.

Temperature data should be considered during the manufacture and clinical use of temperature sensitive orthodontic materials like the nickel titanium wires. According to Moore12 if a single oral temperature were to be selected for the investigation of the in-vitro properties of orthodontic wires, 35.5°C would be more appropriate than 37°C.

Results
NITINOL SE
With NITINOL SE the complete transformation to austenite (Af) occurs at about 60°C, which is considerably above the temperature of the oral environment.

Copper NiTi 35
A single peak on the heating DSC curve, which corresponds to the martensite to austenite transformation indicates that the Af temperature (29.1°C) is under oral cavity temperature for copper NiTi 35.

NEOSENTALLOY
NEOSENTALLOY has a completely austenitic structure close to the temperature of the oral environment (32.7°C). There is also considerable hysteresis for the TTR in the forward and reverse directions for the complete transformation (martensite to austenite).

Bioforce (anterior section)
Just like NEOSENTALLOY, in the anterior section of Bioforce we see the complete transformation occurring very close to body temperature 32.5°C.

Summary
SENTALLOY archwires were the first reported superelastic nickel-titanium archwire in orthodontics.5 They are body heat activated and are capable of producing excellent treatment results because they deliver a light and constant force for a long period of time; which is considered physiologically desirable for tooth movement.

References
Uniting Knowledge with Those Who Seek It

The Clinical Alliance for Research and Education is at the root of the GCARE name and at the heart of what we do. More than an acronym, it’s our commitment to an idea that defines who we are. It’s about a dedication to pure science, the company we keep, the knowledge we uncover and the way we share it. Founded on clinical integrity and shaped by your input—GCARE is focused on your needs. From implementing and integrating the latest technology, to enhancing clinical outcomes to practice-growth solutions, if you’re looking for a deeper understanding of not just what, but also how and why, look to scientists, teachers and leaders of GCARE. Because knowledge is nothing more than trivia...until you care.
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**Author:** Lindsay Peach, UOBG Program Director

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The UOBG prides itself on its ability to be different things to different people. Through its preferred partnership program — at last count, 29 companies strong, and growing — the UOBG is able to offer its members a selection of practice-oriented programs and products that are as diverse as they are distinguished.

Members can take advantage of discounts on everything from practice transition consulting to software and customized marketing materials from [www.GACpowered.com](http://www.GACpowered.com).

Recently the UOBG added three new preferred partners to its portfolio of product and service providers. Typical of the UOBG’s strength in diversity philosophy, each of these new members brings something new and unique to the table.

**Passion for progress**

If you’re not familiar with The Progressive Orthodontist (TPO) magazine, you’re missing out. This relatively young publication is already on the “must read” publication list of many orthodontists.

The magazine, and accompanying online forum, offers fresh insights, new trends and best practices for the business of orthodontics.

This includes articles about team building, practice development, marketing and social media, as well as regular features geared specifically for residents and new orthodontists.

Worth every dollar of its $189 annual subscription price, UOBG members can redeem UOBG coupons for a subscription to The Progressive Orthodontist.

A quarterly publication, it will hook you after the first issue. If the whip-smart offerings in TPO have captured the attention of the orthodontic community, then the online expertise of Sesame Communications has it buzzing.

**Be online and be in touch**

A preferred partner since 2011, Sesame Communications is the leading provider of cloud-based patient connection systems for the dental industry. Sesame Communications’ strength is placing you...
‘UOFG members can take advantage of discounts on practice transition consulting, software and custom marketing materials where patients are today — online. Having evolved from an appointment reminder service, Sesame Communications is now a comprehensive super-source for all things online, including website development, SEO and SEM, plus online marketing and social media management.

UOFG members enjoy special discounts, as well as the option to use UOFG coupons on select Sesame Communications online services.

_The right tools to succeed_

A preferred partner since early 2011, the Pride Institute offers UOFG members a unique and fully customized approach to practice management that is designed to maximize business potential.

The Pride Institute has been empowering the dental community with proven business solutions for more than 35 years. In partnering with them, the UOFG has created one of the most valuable benefits available to our members: the ability to gain access to a wide range of professional consulting services to help grow your practice.

Developed to meet the needs of the modern orthodontic practice, Pride Institute programs help you and your team in the business of orthodontics and quality care, and ensure implementation and accountability through hands-on consulting.

These are just a few of the newest preferred partner benefits. There are more than 25 others that we haven’t mentioned.

And here’s the thing: We haven’t yet touched on the single most impressive aspect of the UOFG — the price. The UOFG membership definitely has its privileges, and it doesn’t cost a thing.

For your free membership in the UOFG, point your browser to www.UOFG.org to join. And then, let the advantages begin._

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Win a free trip to New York!

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You may contact Lindsay Peach via e-mail at lindsay.peach@dentsply.com or via phone at (631) 419-1700. In addition, please visit the UOFG website at www.uobg.org for more information.
Sesame Communications appointed to UOBG Preferred Partner Program

In late 2011, the United Orthodontic Buying Group (UOBG) announced a partnership with Seattle-based Sesame Communications, a leader in cloud-based patient communication systems. Through this new preferred partner addition, the UOBG will help orthodontists meet patients where they are most likely to be found today — online.

UOBG members will receive special discounts as well as the option to use UOBG coupons on select Sesame Communications online services designed to accelerate practice growth. Sesame Communications joins an already impressive stable of preferred partners that the UOBG makes available to its growing membership.

The UOBG is dedicated to providing value to its members through its enhanced Preferred Partner Program. The Preferred Partner Program allows the UOBG to create strategic relationships with leading companies in orthodontics that offer quality products and enhance the value of the UOBG membership through attractive pricing and value-added services.

The UOBG Preferred Partners offer exclusive opportunities for orthodontists, often creating unique programs or services available only to UOBG members.

“UOBG Preferred Partners must meet stringent requirements. We selected Sesame Communications because of their extensive experience in online dental marketing,” said John Kringle, managing director of UOBG. “Sesame specializes in helping practices get found, get chosen and stay connected through targeted, integrated online marketing strategies.

Whether a practice has an underperforming or outdated website or no website at all, Sesame can help create an online strategy to accelerate practice growth.

Our members have found this partnership immensely rewarding. We are delighted to have Sesame Communications as our newest Preferred Partner.”

An unchallenged leader in online behavior research, Sesame Communications is dedicated to helping dental practices uncover what patients want and what works best for them in a rapidly evolving digital market.

Since 1999, Sesame Communications has evolved into a top-flight, online marketing communications technology services firm offering Web and mobile site design, patient portals, search engine optimization, social media services including sweepstakes and contests, online marketing and other strategic online services to enhance practice growth.

Sesame Communications complements these offerings with rich analytics to help better manage practice growth.

In one of its most recent studies, Sesame Communications was able to identify the top 25 factors that influence the ability of an orthodontist’s website to attract new patients. Sesame uses this research to...
their doctors’ online presence and to help increase new patient case starts.

“Our partnership with the UOBG solidifies our leadership position and demonstrates our combined commitment to the success of every orthodontic practice,” said Diana P. Friedman, chief executive officer at Sesame Communications.

“Now it’s easy for an orthodontist to quantify ROI on patient communications, patient engagement and marketing investments. When you look at what Sesame does and what the UOBG stands for, you can see why this relationship makes so much sense. Sesame is honored to partner with the UOBG to offer this best of class system to accelerate practice growth.”

In the few months that this program has been available to UOBG members, we have seen unprecedented success and interest. UOBG members are excited to be able to redeem their UOBG coupon points for such a valuable investment in the future of their business.

As a DENTSPLY GAC and UOBG practice, Drs. Groesch and Longos of central Illinois are just one of many practices taking advantage of the newest UOBG Preferred Partner Program from Sesame Communications.

As a UOBG member, their office received a complimentary Online Effectiveness Evaluation with Sesame Communications that uncovered why their website was not performing as expected any longer.

Groesch and Longos were able to use the UOBG coupons they accumulated toward the purchase of their new website, mobile site and the In-Ovation® System Provider Package of Web content through Sesame Communications.

“Just days after our new website went live, we received several requests for new appointments via e-mail. Our old website functioned, but the new one is remarkably better,” said April, the office manager for Groesch and Longos.

‘UOBG Preferred Partners must meet stringent requirements. We selected Sesame Communications because of their extensive experience in online dental marketing ...’

**about the author**

**Gib Snow, DDS**, of Lancaster, Calif., has been a Sesame member since 2001 and a UOBG member since 2008. Snow Orthodontics uses Sesame for all its online marketing, including its website, mobile site, search optimization, social media strategy, patient portal and reminders.

Through the UOBG Preferred Partner Program, the practice had its website and mobile site redesigned by Sesame. Through their Sesame marketing strategy, today Snow’s eight office locations receive an average of 463 calls per month with 88 patients per month identified as new.

For more information on joining the UOBG, or the UOBG Preferred Partner offering visit www.uobg.org or speak with your DENTSPLY GAC sales representative.

To learn more about Sesame Communications, visit www.sesamecommunications.com or call (877) 633-5193.
submissions
formatting requirements

Please note that all the textual elements of your submission:

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must be combined into one Microsoft Word document. Please do not submit multiple files for each of these items. In addition, images (tables, charts, photographs, etc.) must not be embedded in the text document.

All images must be submitted separately, and details about how to do this appear below.

If you are interested in submitting a C.E. article, please contact us for additional instructions before you make your submission.

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Article lengths can vary greatly — from a mere 1,500 to 5,500 words — depending on the subject matter. Our approach is that if you need more or less words to do the topic justice, then please make the article as long or as short as necessary.

We can run an extra long article in multiple parts, but this is usually discussing a subject matter where each part can stand alone because it contains so much information. In addition, we do run multi-part series on various topics. In short, we do not want to limit you in terms of article length, so please use the word count above as a general guideline and if you have specific questions, please do not hesitate to contact us.

_Text formatting

Please use single spacing and do not put extra space between paragraphs. We also ask that you forgo any special formatting beyond the use of italics and boldface, and make sure that all text is left justified.

If you would like to emphasize certain words within the text, please only use italics (do not use underlining or a larger font size). Boldface should be reserved for article headlines, headers and subheads please.

Please do not “center” text on the page, add special tab stops or use underlines in your text as all of this must be removed manually before layout. If you require a special layout, please let the word processing program you are using help you to do this formatting automatically rather than doing it manually.

If you need to make a list or add footnotes or endnotes, please let the word processing program do it for you automatically.

There are menus in every program that will help you apply all sorts of special formatting.

_Images requirements

Please number images consecutively by using a new number for each image. If it is imperative that certain images are grouped together, then use lowercase letters to designate the images in a group (i.e., Fig. 2a, Fig. 2b, Fig. 2c).

Insert figure references in your article where they are appropriate, whether that is in the middle or end of a sentence, but before the period rather than after. Our preference is to have figure references noted in the appropriate place within the text as it helps the readers to orient themselves when moving through the article. In addition, please note:

- We require images in TIF or JPEG format
- These images must be no smaller than 4 x 4 inches in size at 300 DPI
- Images should be 1 MB in size each

If you have an image that is greater than 1 MB, please do not bother “sizing it down” to meet our requirements, but send us the largest file size available. The larger the starting image is in terms of bytes, the more leeway the designer has in terms of resizing the image to fill up more space should there be room available.

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You may submit images through a zipped file via e-mail, unzipped individual files via e-mail or post a CD containing your images directly to us (please contact us for the mailing address as this will depend upon where you will be mailing them from).

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At the end of every article is a contact info box with contact information along with a head shot of the author.

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_Questions? Comments?

Please do not hesitate to contact us for our International C.E. Magazine Author Kit or if you have other questions/comments about the article submission process:

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