Table of Contents

Cover Story
The Straight Story on Orthodontics in the General Practice

Continuing Education
Periodontal Infection and Glycemic Control in Diabetes

Esthetics
Esthetics: Facial Esthetic Design

Michael Apa, DDS

Implants
Implant Dentistry: Dental Implants-Mastering Esthetics in the Smile Zone
Lee H. Silverstein, DDS, MS, Gregori M. Kurtzman, DDS, MAGD, FACD, DICOI, David Kurtzman, DDS, Peter C. Shatz, DDS
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The Straight Story on Orthodontics in the General Practice
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By some accounts there’s an enormous untreated portion of the population that might benefit from orthodontics. In fact, the Academy of General Dentistry (AGD) reported in 2003 that only about 10% to 20% of orthodontic problems were being diagnosed. It stands to reason that diagnosing and treatment planning orthodontics could provide general dental practices with additional satisfaction and financial boosts. Yet, according to an AGD survey from 2002, at that time only 9% of AGD members said they performed minor or complex orthodontics on a weekly basis. The percentage was higher when those procedures were considered on a quarterly basis. The trends are changing. Today, depending on who you ask, about 20% of general dentists are involved in comprehensive (ie, bands and brackets) orthodontics. If you consider the number of general dentists who’ve incorporated such technology advancements as clear aligners into their practice, then the percentage that’s directly involved in orthodontics is probably a little bit higher. What’s more, recent results from an American Association of Orthodontists (AAO) survey suggest that more than 1 million adults in the United States are currently wearing braces, and adults account for 20% of all orthodontic patients.

According to Don Joondeph, DDS, MS, this year’s AAO president, the trend of more adults seeking orthodontic care is likely to continue. Contributing to the trend of increased orthodontic care overall are patient education, a desire for esthetics, and technological advancements that enable dental professionals to offer people orthodontic treatments more efficiently over less time, and in a much more esthetic way, he says. “The results can be far superior in a shorter amount of time than they used to be,” Joondeph explains of today’s orthodontic treatments. “Additionally, today’s orthodontics fits into current interdisciplinary protocol.”

Once upon a time, orthodontists would do their thing, general dentists would do theirs, and endodontists and periodontists would do their own things, Joondeph recalls. Today’s mandates for interdisciplinary communication and treatment planning represent the biggest change in orthodontics today—the team approach—in which all members of the dental team work together to treat the patient in anticipation of what’s ahead, whether it’s restorative dentistry, bonding, or whitening, Joondeph says. “Orthodontists today are working with general dentists and other specialties to plug orthodontics into the overall care and treatment of the individual,” Joondeph observes. “As a result, we can produce much better results.” At the same time, more and more general dentists are performing orthodontics in their practices, and certain technologies such as Invisalign® have contributed to that trend,” says Frank Spear, DDS, MSD, director and founder of the Seattle Institute for Advanced Dental Education, and a private practitioner. He believes issues of knowledgeable case selection have enabled professionals to identify those cases that they can comfortably and appropriately treat, while allowing them to refer other, more complex cases to specialists. The orthodontic specialty requires an additional 2 to 3 years of postgraduate specialty training and an advanced degree in orthodontics, or a certificate of proficiency. Despite general dentists’ perhaps limited orthodontic education in dental school, there are certain areas of orthodontic therapy that may fall within the realm of the general dental practice. However, those who choose to avail themselves of continuing education opportunities and provide orthodontics in their practices will be held to the same standard of care that specialists in their community are, Joondeph emphasizes.

Here’s the Inside look at orthodontics in the general practice—the positive place it may have in satisfying restorative case needs, as well as the manner in which it is taking center stage in the new age of interdisciplinary dentistry. Our interviewees provide us with an overview of what’s taking place where orthodontics is concerned,
and they offer considerations for case selection and treatment planning. Finally, they provide insights into seeking out more information and ongoing education.

**Movements in Orthodontic Technology**

In general, the trends are to streamline treatments using appliances that are smaller and less visible, as well as more efficient, say those who spoke with *Inside Dentistry*. What’s more, orthodontic treatments of today are moving much faster. Vincent G. Kokich, DDS, a professor in the department of orthodontics at the School of Dentistry at the University of Washington in Seattle, summarizes some of what’s new in orthodontic technology: mini or screw implants within the last 3 to 5 years to enhance anchorage; smaller, more cosmetic, and more streamlined appliances; and Invisalign aligners. Other technological introductions are also changing the face of orthodontics today.

**Self-ligating brackets.** According to George W. Gutroff, president and chief executive officer of Ortho Organizers, Inc, there’s a movement and growth within the dental marketplace toward self-ligating brackets. They don’t require ligature and they retain the archwire mechanically within the bracket. Self-ligating brackets put less friction on the wire and also enhance the sliding mechanics, with the intent that teeth may move faster and more efficiently, he says.

Wire alloys. According to Eric Gheewalla, DMD, an orthodontist in the Boston area, different alloys in orthodontic wires have enabled the use of fewer wires for longer intervals in between patient appointments. Additionally, Kokich says, the trend has been to use wires that are more flexible, which has also contributed to streamlining treatments.

**Mini (screw) implants.** For temporary anchorage, this technology is enabling orthodontic treatment in a whole new way, particularly for cases that would have been previously limited by the amount of anchorage available from adjacent or opposing teeth. Inserted temporarily into the bone, these implants provide orthodontists with extra leverage for moving teeth in a certain direction when there’s insufficient area to push or pull against, explains Gheewalla. When the treatment is complete, the implants are removed.

**Clear aligners (Invisalign).** Align Technology, Inc, manufacturers and marketers of the combined technology and technique known as Invisalign, first received US Food and Drug Administration marketing clearance for the medical device in 1998. However, according to Thomas M. Prescott, president and chief executive officer of Align Technology, it wasn’t until the year 2000 that greater US and worldwide acceptance of the clear aligners was achieved. To date, approximately 40,000 dentists worldwide—more than 20,000 of which are general practitioners in the United States—are certified by the company to prescribe and offer this orthodontic treatment to their patients. In fact, since Invisalign was introduced, more than 529,000 patients have started or completed orthodontic treatment with this technique, Prescott said, and approximately 38% of them are being treated by general practitioners.

According to Gheewalla, the concept of clear aligners for minor tooth movement based on a series of impressions isn’t new. However, he says that with Invisalign, one impression is taken that is integrated with a computer projection of how the patient’s teeth would incrementally move, so a multitude of sequential aligners can be manufactured from one impression, thereby simplifying the process.

Lou Shuman, DMD, CAGS, vice president of strategic clinical relations for Align Technology, explains that the Invisalign technique has been integrated into 36 orthodontic programs across the country, as well as approximately 11 undergraduate programs. Invisalign uses a series of customized medical devices (clear aligners) that are shipped to the dentist’s office, where they are dispensed to the patient as his or her treatment is managed. Typically the patient receives 3 or 4 aligners at a time, each of which is worn for about 2 weeks.

**The Line on Adult Patient Expectations**

When it comes to orthodontics, general practitioners who are knowledgeable about the benefits of proper occlusion and tooth alignment are educating their patients; they’re acting as the information and referral gatekeepers. They’re also enlightening patients to the fact that orthodontics doesn’t just have a cosmetic result, but it satisfies functional and medical requirements, too, emphasizes Gutroff.

"As more patients become aware of those functional or medical implications, that knowledge helps them to seek out and accept orthodontic treatment," Gutroff says.

It doesn’t hurt that there’s also a push for more direct-to-consumer marketing, particularly in the case of clear aligners. But even more conventional orthodontics are being advertised mainstream, as demonstrated by AAO advertisements published in such consumer magazines such as the November 2006 issue of *Ladies’ Home Journal*.

"What’s taking place is demand creation and marketing," explains Prescott. "Patients are being attracted to the dental practice and they're starting to ask their dentists about Invisalign. Whether those dentists are interested in
performing Invisalign treatment or a fixed appliance therapy in their practice because it’s a simple Class I crowding, or they refer the case to a specialist, in the long run it’s good for the patient and good for dentistry overall."

Adult patients are demonstrating their elevated level of educated consumerism. They’re searching for information about procedures consistent with the healthy lifestyle they want to live. Subsequently, they’re pursuing professionals and procedures that fall within those parameters. A recent survey by the AAO found a 37% increase in the number of adult orthodontic patients from 1994 to 2004; many of these adult patients received braces for the first time.²

"Messages in the consumer marketplace are letting people know that they can look better, feel better, and have a better functional bite," Prescott says. "This fits in with the broader demographic wave of people with more disposable income wanting to be healthier and more fit and being willing to pay to maintain their health. Having a better smile is very important to this population."

Regardless of the orthodontic technique that’s ultimately used, the opportunities associated with increased adult patient interest in orthodontics bring with them inherent potential challenges. These include periodontal involvement, more restorations to deal with, and teeth that aren’t in a growing face or jaw. As a result, even an orthodontic specialist may need to consult with other specialists (eg, periodontists, maxillofacial surgeons).

Those challenges impact case selection in terms of what can be treated in the general practice and what should be referred to a specialist (See Case Selection Considerations, page 46).

**Stabilize Your Collaborate Efforts**

Joondeph emphasizes that today there’s more collaboration between orthodontic specialists and general practitioners, with the general dentist participating more in treatment, even if they don’t necessarily perform the orthodontics. He explains that the general practitioner and the orthodontist will jointly treatment plan and supervise the patient so that the teeth can be ideally positioned for veneers, bonding, or implants, for example. This increased involvement by general practitioners—and their newfound knowledge in the specialty—is new and a trend that’s likely to continue, unlike in years gone by. According to Shuman, general practitioners traditionally had a very good understanding of such specialties as periodontics and endodontics. Their comfort level for making treatment and/or referral decisions in those areas was greater than in cases involving orthodontics, he suggests. They knew what cases needed what types of treatment and, of those, which they could do themselves and which they should refer. It was different with orthodontics, he says.

"What happened traditionally in the orthodontic community is that many of the referrals occurred when parents decided it was time for the child to have orthodontics and they asked for a recommendation." Shuman says. "By increasing awareness today of orthodontics in the hygienist’s chair or the general practitioner’s chair, we’re able to increase their knowledge of how orthodontics can be integrated into a combination restorative treatment plan that offers enhanced benefits to the patient—such as perfectly aligned teeth for when veneers are placed or when bleaching is performed."

"What’s happening now is they’re becoming more interested and educated in orthodontics so they’re more aware of it," says Guttroff. "When they see their patients on an ongoing basis, they’re now recognizing potential orthodontic cases that they either treat themselves or refer out to a specialist."

Much of the interaction and communication between the general practitioner and the orthodontist takes place at the beginning of the case, Gheewalla explains. The most important thing to do at that time is diagnose the case and treatment plan it properly before doing anything.

Spear emphasizes that the process is a two-way street in which the orthodontist must have an understanding of what the general/restorative dentist is looking for as a final result. Simultaneously, the restorative dentist must have an understanding of what is or isn’t possible orthodontically. It’s very important for both practitioners to come to a clear decision about what the outcome is that they’re looking for, Spear says.

"If you’re restoring multiple teeth following orthodontic treatment, finishing the occlusion may not be as critical because the restorations can correct some of those issues," Spear explains. "If, on the other hand, you’re referring a patient who’s not going to have any restorations, then the finishing of the orthodontics and the correction of the appearance and occlusion become much more important."

**Brace Yourself With Proper Training**

Comparatively speaking, dental school graduates know more or have a better background in endodontics, periodontics, or other specialties than they do in orthodontics, suggests Ron Austin, DDS, a general dentist who has been able to focus 90% of his practice on orthodontics since about 2002. Those general dentists graduating from dental school who want to learn more about orthodontics have to realize that it takes a lot of time, a great deal of effort, and a considerable financial investment, he says.
"It’s not something you can learn on the weekend," explains Austin, who has been an instructor for the Academy of Gp Orthodontics (AGpO, www.academygporto.com) for more than 10 years. "It really involves a lifetime of learning, so it’s not for everybody."

The learning process he refers to should involve a good, comprehensive, and organized course—one that includes not only lectures, but also hands-on components. Austin cautions that hands-on could mean working with plaster models or actual live patients. Admittedly, he says he’s biased toward the combination 2-day lecture and hands-on live-patient approach that spans 2 years because that’s what he and the AGpO advocate.

Mentoring throughout the learning cycle is essential, so the education venue selected should provide you with the support of experienced people, our experts suggest. Joondeph notes that a good mentor—a trained orthodontic specialist—will be able to help you assess a particular case or situation and determine if it is too complex for the general dentist to delve into, or if it is appropriate based on his or her knowledge base. Gheewalla suggests that a mentoring relationship will help general practitioners develop an appreciation of basic tooth movement and what the possibilities are from one case to the next as they gain experience.

Our experts explained that much of orthodontics is troubleshooting—knowing what to do when the unexpected occurs—as well as understanding that each patient is different and will respond to the same types of treatments in unique ways.

"Learning the orthodontic technique and the mechanics of tooth movement is only a small part of orthodontics," says Austin. "Diagnosis is a large part. You have to know what you’re starting with in order to know where you’re going and what your limitations are."

According to Gutroff, there are many specialized orthodontic training opportunities available today. These range from ongoing courses offered through professional organizations like the American Orthodontic Society (www.orthodontics.com), the International Association for Orthodontics (www.iaortho.org), or the American Association of Orthodontists (www.braces.org); specific training through private companies; and programs conducted by private institutes, he says. Overall, Joondeph encourages practitioners to attend courses conducted by reputable organizations, such as those that are ADA CERP providers.

Prescott cautions general practitioners interested in taking courses in orthodontics or who are thinking that they might want to incorporate it into their practices that it’s probably not for everybody. Orthodontics in the general practice—although very rewarding and satisfying for many—requires a commitment by the doctor and his or her staff to ongoing education and active integration in the practice so everyone truly develops their skills.

Conclusion

It’s clear that general practitioners are becoming more and more involved with orthodontic care. Some are performing the orthodontic treatments in their practices. Others are becoming more educated in the specialty in order to be more "orthodontically aware" and better able to diagnose, treatment plan, and refer cases to their specialist colleagues.

Those we spoke to emphasize that education is key to ensuring that diagnosis, referrals, treatment planning, and subsequently selected procedures are performed properly. Surprises do happen because tooth movement is unpredictable, even with the best of planning. The team approach can help everyone involved to appropriately react when the unexpected occurs.

Therefore, if the case involves a collaborative team approach among the general practitioner and the orthodontist, as well as other specialists, then communication will be one of the major factors in its success. If there will be restorative treatments that will depend on the position of the teeth, then interaction and communication between the general practitioner and the orthodontic specialist—perhaps more so than usual—will be warranted.

"I think the biggest trend is that orthodontists and general practitioners work together much more closely and we do things jointly, rather than just having a patient referred for orthodontics," Joondeph says. "Nobody has to be out on their own anymore."


SIDEBAR 1

Case Selection Considerations

*Case selection will determine the specific orthodontic techniques* that are used for a given patient, as well as whether or not orthodontics is necessary at all. Comments *Inside Dentistry* received suggest general agreement that certain types of cases are appropriate for general practitioners—providing they have the necessary education...
and skill set—and others would be best referred to specialists. Frank Spear, DDS, MSD, says that cases that can be treated with Invisalign® and conventional orthodontics (eg, brackets and wires) to align teeth are within the scope of a general practitioner. "I think the critical outlet would need to be that they need to recognize which patients can be treated with some of those techniques effectively and efficiently and which patients probably should be sent to an orthodontist," Spear clarifies. For example, aligning lower anterior teeth or aligning some crowded or crooked maxillary anterior teeth are within the scope of potential treatments that appropriately educated and trained general practitioners could do, Spear says. Among the cases that he would refer to a specialist are those requiring orthognathic surgery, patients with severe Class II or Class III malocclusions, or cases in which there is an issue of vertical maxillary access in which the maxilla needs to be impacted, Spear says. Additionally, he suggests that cases involving extractions and significant amounts of movement may also be referred to specialists, although he acknowledges that there are general practitioners who are comfortable treating such cases on their own. "When patients have more significant problems involving missing teeth, periodontal disease, or need space created for restorations or implants, then I think it is better to treat the patient in a team fashion using interdisciplinary treatment," believes Vincent G. Kokich, DDS, an orthodontist whose practice is limited to the treatment of adults. Align Technology, Inc, launched a new software program called ClinAdvisor™ last October that’s designed to assist Invisalign-certified dentists in assessing cases against their own skill set to determine the level of complexity and whether or not they should be referred to a specialist. According to Thomas M. Prescott, president and chief executive officer of Align Technology, Inc, the software enables dentists to recognize those malocclusion cases that are more difficult and involve more complex functional and movement problems. Eric Gheewalla, DMD, an orthodontist, notes that there is no one standard. The selected orthodontic approach depends on case selection and the particular techniques and materials with which the dental professional was trained in order to achieve certain movements. So, whether a fixed appliance technique (eg, braces) or removable appliance technique (eg, clear aligning technology) is used will be determined by the specific case diagnosis. Within the fixed appliances category there are different prescriptions of braces with regard to torque, angulation, and slot size; there are also self-ligating brackets. Within the removable appliances category there are simple appliances for very minor tooth movement and technology such as Invisalign for more complex and lengthy treatments, Gheewalla explains. Perhaps most importantly, Gheewalla says, is asking the question, "What are we trying to accomplish in this case?" He says that sometimes the goal is to reposition teeth slightly so the general dentist can take over and continue with their restorative treatment. Other times the case must be brought to the most ideal position with orthodontics, Gheewalla explains.

WHEN IT’S TIME TO RECOMMEND ORTHODONTICS

Spear—the director and founder of the Seattle Institute for Advanced Dental Education—shares a list of six requirements that he looks for when determining if orthodontic treatment is necessary before initiating restorative dental work. These considerations encompass the condition of the existing tooth structure, gingiva, and occlusal/functional aspects.

1. **Do the teeth need to be restored or not?** If not—meaning, the teeth are attractive and without decay—then aligning them orthodontically is preferable to preparing them and restoring them, Spear says.

2. **If the teeth are being restored for esthetic reasons, can the occlusion be corrected without orthodontics?** Oftentimes it may be possible to achieve the correct esthetics, but not the correct occlusion because the patient’s malocclusion is Class II or Class III. Spear explains that you might be able to restore the maxillary anterior teeth and make them look better, but they won’t function properly without orthodontics.

3. **Consider the interproximal papilla.** The papilla can be moved apically but not coronally, Spear says. With malaligned teeth, as they rotate or overlap, the papillas typically are blocked apically such that without orthodontics, the shape of the restorations will appear different as a result of variations in the papilla heights.

4. **Consider the gingival margin.** Similarly, the gingival margin could be moved surgically in an apical direction. However, consider one central incisor that is out to the facial. When the tooth moves out to the facial, Spear explains, the gingiva tends to move apically. With one central with the gingiva 2 mm to 3 mm apical to all of the other teeth, Spear notes there is no way to correct it without aligning the tooth orthodontically.

5. **Can you restore the teeth and make them look good?** In some cases the teeth are so crowded that you simply can’t restore them and make them look good without first performing orthodontics, Spear says. "What I would usually do is if the first four anterior teeth are acceptable, then I’ll have the laboratory create a diagnostic wax-up to see if we can achieve a decent appearance with the teeth in their current location," Spear explains. "If not—or if we’ll end up with teeth that are too small or too narrow and long because of the crowding—then I’d recommend..."
orthodontics to the patient."

6. Would restorative treatment destroy the tooth? In other words, Spear says that if in order to restore the teeth so that they’re aligned correctly you would actually have to destroy the tooth (i.e., aggressive preparations, pulpal involvement, endodontics, and root canals), then he would typically recommend orthodontics.

ADULT VS CHILD ORTHODONTICS

In a nutshell, the main differences between orthodontics in children and orthodontics in adults are that children are growing, they are healthy periodontally, and they have very few restorations, explains Kokich. They also have most of their teeth. Adults have jaw relationship problems and they are not growing, in addition to the fact that they could present with preexisting restorations, missing teeth, and periodontal disease—all of which make the orthodontic treatment of adults, in some cases, more complicated.

"With adults and orthodontics, we may have to rely on our colleagues in other parts of dentistry to help us," Kokich says.

In a growing face—as with a child or adolescent—the orthodontist has the possibilities of altering the position of the teeth and bones of the face more efficiently and productively, Kokich elaborates. With adults, there is no possibility of using growth, "so we either have to move the teeth within each jaw bone, or we have to rely on jaw surgery as an adjunct to orthodontic therapy," he explains.

If there were guidelines to summarize the manner in which children and adults would be treated orthodontically, Kokich would point out that children are treated idealistically and adults realistically.

"In children we need to make the orthodontic results—their occlusion and the position of their dentition—as ideal as possible because we don’t know and can’t predict the future; we don’t have a history of these young people," Kokich explains. "In an adult, however, we can look at their mouth, teeth, and their history and use that to help make our treatment objectives more realistic than idealistic based on their needs up to that point."

Even though some adult cases may prove challenging (e.g., involve missing teeth, periodontal issues) and require referral and an interdisciplinary approach, Kokich doesn’t think this means that the restorative dentist should totally divorce themselves from the treatment planning responsibility. On the contrary, he says the restorative dentist in adult treatment should communicate with the orthodontist about the restorative treatment plan so that the orthodontist can then respond by confirming what he or she can do to enhance the restoration of that patient, Kokich says.