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Imagine for a moment that you are searching for a new treatment philosophy. What benefits would you consider important in the selection process? Most professionals would rank consistent optimal treatment results as the primary benefit. The majority of us would also want other clinical benefits such as elevating overall clinical effectiveness by simplifying complex treatment, minimizing unnecessary procedures, shortening treatment time and maximizing the long-term prognosis of therapy to reduce maintenance problems. As a spin-off of these clinical benefits, most would want a treatment philosophy that secondarily produces practice management and marketing benefits. These benefits may include: more efficient time utilization and interprofessional communication; reputation enhancement in both the lay and professional communities; higher levels of patient and referral satisfaction; enhanced interdisciplinary comprehension and utilization of comprehensive care with resultant stronger team support and professional relationships; greater personal satisfaction for doctor and staff; enhanced patient trust and patient-perceived value of therapy - the list could go on and on. If these sound like the benefits you would seek, look no further. The treatment philosophy is called Interdisciplinary Dentofacial Therapy or IDT. When properly performed, IDT can consistently produce optimal treatment results while simultaneously producing profound practice management, time management and marketing benefits for the practitioner, making IDT an ideal tool for optimally positioning an orthodontic practice for the future. This article will briefly define the concept and philosophies of IDT. It will also give insight into the implementation of IDT and why it is necessary today as well as in the future.

There has never been a more exciting time to be part of the dental profession. Extensive scientific and technological advances are being made at an ever-accelerating rate, enabling us to help patients in ways never before thought possible. But with these ever-increasing possibilities of treatment also come ever-increasing responsibilities. We have to study continuously to keep up with the rapid rates of change in orthodontics, as well as in restorative dentistry, periodontics, oral and maxillofacial surgery, endodontics, and in all other disciplines of dentistry and medicine. The phenomenal increase in information is making it more and more difficult to stay abreast in one area, much less in all of them. And as a result, we are increasingly having to rely on the other disciplines to help us help our patients. The responsibilities for our decisions and actions are also increasing, as we routinely perform more invasive and/or less forgiving procedures, such as adult orthodontics, orthognathic surgery and/or the placement of dental implants.

But even the burden of these heavy responsibilities can be somewhat relieved by the implementation of IDT. As the dental community continues to be challenged by the pressures of today's rapidly changing environment, the need for an optimal team approach to comprehensive care only becomes more important. Perhaps the most compelling reason to adopt IDT is the potential to significantly improve the overall productivity of the dental team. As new technologies and techniques are introduced, it becomes increasingly obvious that the clinician must rely on the other dental disciplines to help him help his patients. And it becomes clear that the overall productivity of the dental team must continue to improve if the future of the dental profession is to be maintained.

Dr. Roblee practiced general restorative dentistry in Dallas, Texas, before going back to study graduate orthodontics at Baylor College of Dentistry. He is known for his work in esthetic dentistry, orthodontic techniques and interdisciplinary therapy, and he lectures nationally and internationally on these topics. Dr. Roblee is the author of numerous publications and videotapes, including a textbook entitled Interdisciplinary Dentofacial Therapy (Quintessence Publishing Co., Inc., 1994). He is an associate clinical professor at Baylor College of Dentistry in both the restorative department and the orthodontic department. Dr. Roblee is an active member of numerous dental organizations, including the American Association of Orthodontists, the American Academy of Esthetic Dentistry and the American Academy of Fixed Prosthodontics. He maintains a full-time orthodontic practice in Fayetteville, Arkansas, with an emphasis on esthetic and interdisciplinary therapy.
Therapy (IDT): Now and the Future

IDT case utilizing orthodontics, periodontics and restorative therapy. Each therapy was planned and executed to complement other therapies and produce exceptional results. The IDT approach consistently produces optimal results and many secondary practice management and marketing benefits.

Figure 1A. Initial.
Figure 1B. Progress after orthodontic intrusion and gingival recontouring.
Figure 1C. Final result after placement of all-porcelain anterior restorations.

Responsibilities can be outweighed by the unparalleled professional satisfaction and the professional camaraderie produced by reaching higher and higher levels of patient care through the optimal coordination of knowledge and skills in the various disciplines. Different specialists (such as an orthodontist and an orthognathic surgeon) frequently pair up and enjoy a good working relationship, but because of the inherent complexities and difficulties in developing and maintaining a large team, very few groups practice a comprehensive approach that equally encompasses all the disciplines. Consequently, advancing the science of dentistry is not so much the problem today as is employing and orchestrating the science that already exists.

Multidisciplinary therapy, as it is routinely performed, utilizes multiple disciplines, but it is usually performed in a disjointed fashion, where the various providers work as separate entities rather than as a cohesive team. This noncohesive approach can result in disappointing compromises or failures, which frequently lead to frustration and bad feelings between providers. I feel strongly that many of the problems that the orthodontic specialty has in its relationship with the other disciplines, especially with general practitioners or restorative dentists, are a direct result of the shortcomings associated with a typical multidisciplinary approach.

When treatment decisions are left to an individual provider, it is a natural tendency for him or her to characterize a patient's dental and dentofacial problems in terms of his or her own background and interest. In fact, some providers develop treatment plans according to their own capabilities rather than according to what the patient actually needs and the extensive options that the profession can provide. Many orthodontists easily see these problems with their counterparts in restorative dentistry. But very few orthodontists realize that restorative dentists often see them in the same light.

Whenever dentofacial problems are addressed by one provider and not as a team, shortcomings frequently arise that can compromise future providers' treatment. When improperly planned, orthodontic therapy can force compromises in restorative procedures that follow. The resulting frustration and disappointment of the restorative dentist often lead him or her to decline referral of a similar patient the next time. In some instances, general dentists who have their patient's best interest in mind can even misinterpret the situation and think that, through some of the short courses that are readily available, they can easily learn to perform orthodontics as well as, or better than, the orthodontist.
The concept of IDT assists in the ideal coordination of the different disciplines to consistently provide optimal dentofacial care (Figures 1 & 2). At the same time, IDT can help overcome some of the problems and shortcomings associated with a less sophisticated, multidisciplinary approach to therapy. An interdisciplinary approach is similar to a multidisciplinary approach in that it utilizes the multiple disciplines. However, the prefix interdisciplinary represents a more highly structured working relationship among the different disciplines. The word dentofacial of IDT signifies that state-of-the-art care requires the entire team to diagnose, treatment plan, and treat from a dentofacial perspective, not only for esthetics, but also for proper long-term dentofacial health and function.

But what actually differentiates Interdisciplinary Dentofacial Therapy from the typical multidisciplinary therapy? I have found that it is not the demographics or background of a group that determines the level of care. Instead, it is the underlying principles with which a team practices.

I am referring to the three hallmarks of IDT: common comprehension, regimental sequencing and extensive communication. The first is common comprehension. To consistently work together as an interdisciplinary team, a group of providers must have a common comprehension of treatment. This includes common objectives, common philosophy and common knowledge. An interdisciplinary team should establish common objectives in areas such as occlusion, periodontal health and maintenance, dentofacial esthetics, etc. Without these common objectives, individual team members’ therapies may go in different directions.

Along with common objectives, there must be a common philosophy for obtaining them. There should be common philosophies for diagnostic procedures, treatment planning and treatment. There should even be a common philosophy for the way team members talk to their patients and the way they motivate them toward treatment.

The last aspect of common comprehension is common knowledge. As individual team members, we must be experts in our own discipline. We must also understand the other disciplines’ treatments well enough to know how they can help us help our patients, when best to use them and what their limitations are.

But how can a team acquire this common comprehension of treatment? Reviewing tapes and reading the available literature can be instructive. Continuing education courses are helpful, and now there are also some textbooks available that outline the philosophies and objectives of IDT. But experience has shown that there is nothing more effective and exciting than problem-based learning with your team members. I have found that the most effective way for team members to learn and retain this common information is to properly work up untreated cases and then diagnose and treatment plan them as a team. My core team and I get together every Wednesday morning from 7:00 to 8:00 for a team conference about interdisciplinary cases that are currently in the treatment-planning stage or that are currently in treatment.

In addition to these smaller meetings, we also have a larger study group that encompasses several different teams in our area and includes multiple providers from each discipline. This group meets regularly once a month on a weekday afternoon and discusses, diagnoses, problem solves and treatment plans untreated cases that are worked up in a highly structured and comprehensive format. Also, at these meetings each member will periodically present what is new in his or her area of expertise, as well as review literature and summarize continuing education courses. Team meetings in groups such as these can provide the most effective environment for the orthodontist to educate the other team members about what he or she can do to help them. I am certain that most orthodontists will be surprised at what they can learn from the other team members, especially the restorative dentist. The levels of camaraderie and enthusiasm at these meetings are fantastic, because good dentistry is exciting and highly contagious. The common comprehension of treatment that develops can help optimize the process and results of teamwork. Secondly, it teaches team members to appreciate what the other team members can do to help them, replacing possible disappointment caused by unrealistic expectations.

The second hallmark of IDT is regimental sequencing of diagnostic, treatment planning, and therapeutic procedures. To consistently obtain optimal results, dental and dentofacial problems must be analyzed and treatment planned in a highly ordered fashion that ensures that all necessary expertise has been included at the most appropriate time and that no problems or potential solutions have been overlooked. It is also important to regimentally sequence all aspects of therapy to help maximize the team’s individual and overall results and to minimize the possibility of one or more members having to make unplanned compromises.
Case that was diagnosed, treatment planned and treated with an IDT approach. Note the vertical changes achieved with only periodontal and restorative therapies. Even though orthodontic therapy was not needed in this case, these results could not have been achieved if the interdisciplinary team hadn’t utilized orthodontic and orthognathic diagnostic principles. Cases such as this and in Figure 1 can quickly teach a team the benefits of a thorough dentofacial evaluation and comprehensive approach even when performing only restorative and periodontal therapies. This educational process can produce many secondary benefits for the orthodontist. When an interdisciplinary team understands the benefits of IDT, orthodontic problems will no longer be overlooked as they frequently are in multidisciplinary therapies.

Preliminary Therapy: Prelude to IDT
Diagnostics: Phase I of IDT
Treatment Planning: Phase II of IDT
Definitive Therapy: Phase III of IDT
Maintenance: Phase IV of IDT

Figure 3. IDT can be divided into five distinct stages. A detailed flowchart has been developed for each of these stages. To obtain consistent quality results such as those in Figures 1 and 2, dental and dentofacial problems must be analyzed, planned and treated in a regimental fashion to ensure that all necessary expertise has been included and that no problems or potential solutions have been overlooked. The IDT flowcharts are instrumental in facilitating consistent optimal results in comprehensive therapy.
Figure 4. An example of an IDT Diagnostic and Treatment Planning Summary. To be effective in the IDT diagnostic and treatment planning process as well as correspondence, a team should always arrange the problem list in standardized categories and terminology that give a systematic description of the patient's problems. The treatment plan should also be arranged in a standardized format and sequence so that it and the problem list are familiar to and functional with the other team members involved. The standardization enables the team leader to provide a platform for communication that all team members can easily add to and change while also keeping the team focused and going in the same direction. In typical multidisciplinary therapy, the structure of correspondence, when it exists at all, is highly varied between different team members and is usually ineffective, allowing the team and the various therapies to become disjointed.
in their therapy because another team member performed improper therapy and/or therapy out of proper order. To maximize overall treatment and help prevent these problems, detailed IDT flowcharts (Figure 3) have been developed that tell the team the ideal order of various procedures and all the different stages of treatment. These flowcharts have proven extremely beneficial and act as a blueprint for effectiveness in team therapy.

The first two hallmarks of IDT, common comprehension and regimental sequencing, lay the foundation of the team and give it direction. The third hallmark, however – extensive communication – fuels the team, sustains its proper function and promotes its growth. There are three basic types of communication in IDT: team conferencing, correspondence and visual communication.

Team conferencing includes any direct interaction between two or more team members, whether by telephone, across a desk or at a team meeting. Since time is one of our most valuable commodities, IDT is structured to maximize the effectiveness of communication and to minimize or negate the time each team member spends in direct interaction.

The second type of IDT communication, correspondence, entails any written communication between team members. In multidisciplinary therapy, the typical correspondence between team members is disjointed and ineffective, if it exists at all. Correspondence in IDT needs to be thorough yet concise. It needs to reflect a common philosophy and format so that it can be used effectively and interchangeably by all the different team members. Effective team correspondence starts out with a team leader composing a detailed initial problem list and preliminary treatment plan in an easily referenced standard format (Figure 4). This serves as a platform that each additional team member easily builds upon to help keep the team organized, focused and going in the same direction (Figure 5).
Bios... A Bracket Evolution, a Systems Revolution

by James J. Hilgers, D.D.S., M.S.
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Introduction
Bios™ is a light-wire, higher-torque version of the Orthos™ appliance system. It is designed for the orthodontist who doesn’t fill the slot and depends on functional adaptation more and dominance mechanics less. Just as tooth morphology and size help determine bracket placement and occlusion, wire technology and trends in biomechanics help forge the need for different torque values. Put simply, the Bios System allows for earlier torque control with lighter wires. Its strength lies in accommodating the right size wire to achieve a specific mechanical objective. This ensures torque control throughout treatment, creating less dependence on full-size edgewise wires. Wires are downsized when torque control is inconsequential and upsized when torque control is paramount.

The intent with Bios is that when more torque is desired, it is built into the system; when less torque is needed, wires are downsized to use bracket-slot play. Years of work tying specific torque values to biomechanical principles and physiological response allow the clinician who opts for lighter wires to get the best of both worlds: Orthos technology refined in the Bios light force system.

The Theory Behind Bios
Bios is an acronym for “Biologic Orthos System.” This name implies the focus of this sister bracket system to Orthos. It is intended to take all the breakthrough technology of the Orthos System and apply it to lighter-wire, more-biologic mechanics. Bios is designed for the orthodontist who believes in lighter forces, the use of function throughout treatment and the selection of wire size and configuration to deliver desired torque-control values. Orthos was designed by using a sophisticated computer technology to closely identify features in tooth morphology and arch form that allow a perfect occlusion to occur. It implies, however, a complete fit of the archwire in the bracket slot to create this idealization. It is my belief that the need for torque control varies widely and is dependent on patient facial type, tooth position objectives and other clinical and biologic factors. This means that one set of torque values does not fit all cases. It’s just an average. Since it is not very practical (at least at this point) to change the torques on each patient dependent on specific need, the one variable that we do have is the archwires.

By selecting the appropriate archwire to accomplish a certain objective, we have a great deal of leeway over final positioning of the teeth. One fact underscores this approach. Superelastic archwires cannot be torqued. They are what they are. If an accentuation of torque is needed, it needs to be in the bracket system. Of course, a stainless steel arch-

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Dr. James J. Hilgers, a well-known proponent of simplified orthodontic mechanotherapy, was instrumental in developing the recently introduced Bios™ System. He has published and lectured extensively and conducts a semiannual in-office seminar—“The Essence of Practical Orthodontics.” Dr. Hilgers’ private orthodontic practice is located in Mission Viejo, California. He received his dental education at Loyola of Chicago and graduated from the ortho program at Northwestern University.
TYPICAL ARCHWIRE PLAY VALUES

<table>
<thead>
<tr>
<th>Wire Size</th>
<th>Radius</th>
<th>Play</th>
</tr>
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<tbody>
<tr>
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<td>.003”</td>
<td>+/-17.1°</td>
</tr>
<tr>
<td>.0175 x .0175</td>
<td>.003”</td>
<td>+/- 5.2°</td>
</tr>
<tr>
<td>.016 x .022</td>
<td>.003”</td>
<td>+/- 9.5°</td>
</tr>
<tr>
<td>.017 x .025</td>
<td>.003”</td>
<td>+/- 4.6°</td>
</tr>
<tr>
<td>.018 x .025</td>
<td>.003”</td>
<td>+/- 1.5°</td>
</tr>
</tbody>
</table>

Calculating the wire play value as a function of the wire parameters, Height and Width (including the Diagonal that can be easily measured on an existing wire). Note that in this formula, if you use a different corner radius of the wire, replace the value 0.006 by 2 times the corner radius. Also note that the square root is the root of the sum of two squared values.

Table 1. When using an .016 x .016 ideal archwire in an .018 x .025 slot, there is a great loss of active torque. Bracket play is reduced when using a rectangular archwire with a wider rectangular dimension. This further fills the bracket slot, reducing bracket play and increasing effective torque.

Table 2. Completely filling the torque slot ensures that whatever torque is built into the bracket will eventually work itself out. This final expression of torque is defined by both active torque in the bracket slot and the amount of time it takes for the constrained wire to express itself.

Figure 1. The upper molar erupts down the growth (facial) axis. Its normal eruption would be downward and slightly forward, depending on facial type. In brachyfacial (horizontal) growth patterns, more forward growth occurs. In dolichofacial (vertical) growth patterns, more downward growth occurs. It will continue along this eruptive axis unless changed by treatment or functional disturbance.

Figure 2. The upper incisor erupts on its long axis. This is referred to as axial or conical growth. It will continue along this axis unless changed by treatment or functional disturbance.
wire can be actively torqued, but this is generally down the road in the treatment cycle. We wish to choose the appropriate torque control at the onset of treatment, in the very first archwire, to fulfill the specific needs of that particular case. This point cannot be emphasized enough: The bracket system cannot be easily changed on a case-by-case basis. The archwires can. That means the true variable in the system is the size and configuration of the archwire. Since true superelastic archwires cannot be bent, it makes sense to have higher torques built into the system and use archwires according to specific need. Decrease bracket-slot play where torque is needed; increase bracket-slot play where it is not.

“The Bios light wire system offers the clinician who is interested in using lighter forces and wires an entry to Orthos technology. This highly sophisticated system affords a clinical efficiency that is nonpareil.”

I am not arguing that the ideal torque values which the Orthos System implies are not correct. They are. It is just that they require filling the slot as much as possible to allow them to express themselves. When smaller archwires are used, there is a great deal of loss of torque control. When a different need is there, torquing (or detorquing) the wire is required. That is what we wish to avoid or at least minimize.

.018 Slot Versus .022 Slot
Clinicians argue ad nauseam about their choice of bracket-slot size. It is obvious that you can do good orthodontics with either .018 or .022 slots and that the main differences are generally not technical but choice driven. There is no one right way. In this era of superelastic archwires, the differences between using an .018 slot and an .022 slot have diminished. The orthodontist who chooses the .022 slot has clear reasons for that choice. However, in my view, the smaller slot size has some distinct advantages:

1. Torque control in smaller wires. For example, whereas an .016 x .022 Ni-Ti would exert virtually no torque control in .022 slot brackets, it is very effective in the .018 slot system. For a comparable wire in the .022 system, you would have to use at least an .018 x .025 wire, which is considerably less flexible and more difficult to completely engage.

2. Overutilization of round wires. Even though you may be using a rectangular or square wire in an .022 slot bracket, if bracket tolerances are not correct, it is just like using a round wire, with all its negative side effects.

3. Less patient discomfort. The need for heavier torque-control archwires in the finishing phases of treatment creates problems both in and out of the office. Placement of the heavier archwires is more difficult, deflection is decreased and there is a tendency for increased patient discomfort.

4. Less need for defined arch coordination. The heavier the ideal archwires used, the greater the need for detailed archwire coordination. Functional control (i.e., tongue and lip pressure) is minimized when arch form is dictated by rigidity of the archwire. Arch form and continuity are more biologic when not overridden.

5. Less stress on the bond. With the use of new bonding cements (i.e., Fuji light cure) which have less retentive strength, stress on the bonds means more loose brackets. These cements have great potential in a wet bonding field and aid in precise bracket placement (because no isolation devices are necessary), but they are not amenable to heavier forces. Lighter wires that are used throughout treatment aid bracket stability. We have found these newer cements to have excellent retention characteristics as long as larger archwires are not used.

Overcompensation
Torque is controlled in individual teeth or segments of teeth in two ways. Either the bracket-archwire slot tolerances are greatly reduced (i.e., using a larger archwire) or the time of torquing activity is increased (i.e., the archwire is left in longer). These two variables compel the clinician to decide which size wire to use and how long it should be engaged. The concept of functional finishing implies that lighter wires be used whenever possible to allow the muscular pattern of the patient to help in the detailing process. Torque needs for an individual case are defined by choosing appropriate archwire sizes and configurations (i.e., utility arches, reverse curve T-loop archwires) to accomplish a desired objective. Simply stated, when more torque control is needed, the bracket slot is filled. When less torque control is needed, the archwires are downsized to increase play. Where a strong torquing moment is required, it is available in the higher-torqued Bios bracket system. When reduction or loss of torque is required, round or undersized edgewise wires are used. The cases that commonly call for increased torque control are Class II, division 2 malocclusions, extraction cases, and adult cases. The cases that require less overall torque control are Class I and Class II, division 1 malocclusions. Of course, the need for defined torque control can vary case by case, upper arch and lower arch.
Relation of eruptive pattern of teeth in the development of C1 II, d2 malocclusion

Figure 3. In strong growth patterns where the upper molar (a) grows down the facial (growth) axis and the upper incisor (b) grows down its long axis (axial or conical growth), there is a diminution of space between the molars (c) and incisors (d). This accounts for a pinching, or closing, of the arch, resulting in the typical dental characteristics of the Class II, division 2 malocclusion.

This case demonstrates the occlusion and arch form characteristics that result as a consequence of the eruptive direction of teeth. It defines how the interincisal angle relates to the individual growth pattern of this patient. Ideal treatment relates the final position of the teeth to the overall direction of growth.

Figure 4. In the Class II, division 2 malocclusion, torque in the upper incisors is commonly created by advancing these teeth. Torque is then maintained or accentuated by reducing bracket slot play by using large archwires.

Figure 5. Esthetically, the brachyfacial type can accommodate a fuller dentition with a more acute interincisal angle. In this case, a more acute interincisal angle results in facial harmony with good lip repose, an expressive smile and no lip strain. Note that the upper incisors are torqued parallel to the growth (facial) axis, resulting in a 112° interincisal angle, ideal for this particular patient’s growth pattern.

Figure 6A. Example of developing Class II, division 2 malocclusion with constricted upper and lower arches.

Figure 6B. When upper molars are growing closer to upper incisors, the resultant arch form shows flaring of the upper laterals, lingualversion of the centrals and a constricted, hour-glass shaped arch form. This is typical of the Class II, division 2 malocclusion.

Figure 7A. Final occlusion demonstrating positive torque in the upper incisors created by long duration of edgewise wires with little play in a high-torque slot.

Figure 7B. Final arch form changes in a treated Class II, division 2 malocclusion.
`The Cuspid Conundrum

Upper and lower cuspid torque seems to be the most controversial area of straight wire systems. It can range from -7° to +7° in both arches - in other words, a total variance of 28°. How is it possible that there could be such a divergence of opinion? To begin with, vertical placement of the bracket can greatly affect torque (due to the convexity of the facial surface). A ginglyvally placed bracket can have a torque variance of + or -9°.

“Since true super-elastic archwires cannot be bent, it makes sense to have higher torques built into the system and use archwires according to specific need.”

compared with a bracket placed incisally. However, mechanics are usually the answer to this conundrum. Almost every mechanical force has a tendency to detorque cuspids. Class II elastics, elastomeric chain, retraction in extraction cases and vertical elastics to seat the occlusion all act to detorque these teeth. This needs to be compensated for with torque in the bracket. So, although some might argue that ideal torque would be somewhat. In addition, a more natural smile occurs when the cuspsids support the corners of the mouth. This smile line is enhanced when the upper cuspids (especially) are not undertorqued. It certainly helps avoid the

“orthodontic look” of a narrowed or pinched arch that commonly occurs in extraction cases. First order in-out bends are markedly affected by torque. Positive lingual root torque on both upper and lower cuspids is instrumental in creating proper contact points between the distal of lateral incisors and the mesial of cuspids (both upper and lower). This reduces the number of adjustment bends needed in these areas.

Loss in Torque Due to Bracket-Slot Play

There is a wide variability of torque control in the bracket slot based on the amount of leeway or play between the size/shape of an archwire and the bracket interface. It has been calculated that there is a loss of 6° in torque control for each .001 inch tolerance in bracket fit. For example, an .016 x .022 wire would only exert 9° of torque in a 21° torque bracket. Theoretically it would take an .018 x .025 archwire to allow all of the torque in the bracket to exert itself. With an .016 x .016 archwire, torque is diminished even more due to the shortened diagonal size. When one thinks of torque within the bracket slot, there is an assumption that torque will ultimately be expressed on the tooth. Not so. Wire size, bracket tolerance and force moment are major factors in the final placement of the root. By simply choosing to down-size or upsize the edgewise archwire, the clinician is more capable of reaching a specific goal than by changing specifics in bracket torques. It is more important that the tooth-to-tooth in-bracket torques be symmetrical and harmonious.

Torque to Facial Type

Determining the ideal interincisal angle should not be based on averages. Steiner's 125° interincisal angle is merely an average. Growth direction, esthetics and overbite should also be considered in determining ideal torque in the upper and lower arches.

1. Growth: From the geometric standpoint, the upper molar will follow an eruptive path that closely aligns to the growth direction of the patient. That is, it will erupt down the facial axis. In the more brachyfacial (hypodivergent) patterns, the upper molar will come farther forward due to the more horizontal growth pattern. In dolicofacial (hyperdivergent) patterns, the upper molar will erupt more vertically but not horizontally, again following the vertical disposition of the facial axis. Incisors erupt along their vertical axes (axial growth). It is apparent that if the upper molar is coming forward in the strong growth pattern and the upper incisors are erupting more vertically, space between the two is diminishing. The result: A Class II, division 2 malocclusion with crumbling of the arch, labioversion of the upper lateral incisors, linguover-ision of the upper centrals, an hourglass type narrowing of the upper arch and constriction of the lower arch. Conversely, when the upper incisor is proclined labially and the upper molar is erupting more vertically, the space between them is increasing. The result: Class II, division 1 malocclusion with a V-shaped upper arch, severe overjet and a retruded and flattened lower arch. The answer to this disparity is to torque (or detorque) the upper incisors parallel to the growth axis of that individual's facial type. The interincisal angle in a strong brachyfacial type could be 110° and still be completely normal for that case. It could be 140° in the dolicofacial type and also be normal. In addition, one can infer the anchorage requirements of the different facial types for proper torquing of these teeth.

2. Esthetics: Brachyfacial types can easily handle a more protruded denture. An acute interincisal angle often looks quite attractive in strong facial patterns. It provides a more youthful, expressive appearance than if one always attempts to treat to the average 125° interincisal angle. At the same time, when the incisors are proclined labially in the weak facial pattern, lip strain and facial grimacing are evident. Retraction and

continued on page 14
Relation of eruptive pattern of teeth in the development of C1 II, d1 malocclusion

This case demonstrates the occlusion and arch form characteristics that result as a consequence of the eruptive direction of teeth. It defines how the interincisal angle relates to the individual growth pattern of this patient. Ideal treatment relates the final position of the teeth to the overall direction of growth.
more vertical positioning of the teeth on the denture base are indicated.

3. Overbite: Holding a “correct” overbite in a strong muscular (brachyfacial) pattern is very difficult when the incisors are too vertically inclined. The chevron that is created by a more acute interincisal angle enhances the mutual support of the dentition itself. In addition, it helps alleviate some of the negative effects on the TMJ sometimes caused by a collapsing anterior arch. In the dolicofacial pattern, where overclosure of the bite is not normally a problem, a more vertical positioning of the teeth can help maintain incisal guidance.

**Simplicity By System**

Unquestionably, one of the biggest advantages of Orthos is the systems approach that it brings to arch form and occlusal fit. The highly integrated tubes, brackets and coordinated archwires create a system that allows the clinician to greatly reduce chairtime and increase efficiency. For the first time, all the archwires, from superelastic through ideal, are computer designed and fabricated to achieve the most ideal fit of the teeth. If the tubes and brackets are properly placed, the clinician’s main responsibility is to decide which archwire is needed to achieve a desired result.

**Buccal Root Torque in the Lower Buccal Segments**

Research in the development of the Orthos System indicated a tendency to leave the lower buccal segments unduly lingually inclined, reducing occlusion of

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**Figure 13.** When upper incisors are torqued parallel to the growth (facial) axis, there is harmony in arch form and overjet. This concept is used when setting up torque objectives and determining what, when and where a certain size of archwire will be used. It is also a strong determinant of anchorage needs for each case.

**Figure 14.** From the growth standpoint, ideal torque of the upper incisors (b) would place the long axis of these teeth parallel to the growth (facial) axis of the face (a). This results in a symmetry of growth as the upper molars (c) grow in harmony with the upper incisors (d). This aids in stability of the occlusion and overbite-overjet relationships. It can also be argued that this is the position of the upper incisors that is more harmonious with normal TMJ function.

**Figure 15.** Arch configuration influences torque control. Reverse Curve TMA® Archwires with “T” Loops (.016 x .022) can be adjusted to torque, advance, intrude and retract incisors by simple intraoral adjustments and allow the clinician to define torque and step-ups between incisors and buccal segments.

**Figure 16.** Most mechanics have a tendency to detorque upper and lower canines. Cuspid retraction in extraction cases, buccal space closure with elastomeric chain and vertical seating elastics all have a tendency to detorque these teeth. Lingual root torque on the cuspids helps mitigate this tendency.

**Figure 17.** The Orthos® System is designed for the use of larger wires to express the built-in torque of the brackets and buccal tubes. When undersized archwires are routinely used in the lower buccal segments, there is a resultant lifting of the lingual cusps with concomitant loss of anchorage. Note that the lower buccal segments have been detorqued and expanded with the use of -10° torque along with undersized wires. Proper torque can be achieved by using a full-sized (0° bracket play) archwire. When using undersized torque-control wires (e.g., .016 x .022), proper lower buccal segment torque is achieved by increasing bracket and tube torques up to -27°. Overcompensation needs to be part of the clinician’s thinking when using lighter, undersized archwires with their resultant loss torque control.

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Dr. Hilgers

continued from page 12
Herb Kelleher, the creative and highly effective President, Board Chairman and CEO of Southwest Airlines, has said that his company’s airplanes only make money in the air while carrying customers and cargo between cities. Southwest puts Kelleher’s fundamental business idea into practice every day by minimizing ground time for each of its 234 jets. When a Southwest plane lands, flight attendants assist as many as 137 customers off the airplane and quickly tidy the cabin. Almost immediately, local customers begin to embark. Simultaneously, ground crews are off-loading baggage, refueling the aircraft, servicing lavatory and water systems, removing trash, replenishing snack and beverage items and loading new cargo and baggage. Remarkably, everything is in place, and the jet is dispatched within 15-20 minutes – setting Southwest Airlines (and its consistent profits) apart from the rest of the airline industry.

When you think about it, we are not unlike a highly efficient airline. We are only earning fees when our patients are traveling efficiently toward an orthodontic destination – with brackets, bands and wires in place. The breakage of appliances is the orthodontic equivalent of an extended period of time on the ground or a mechanical failure that causes a costly and inconvenient delay. Extending this airline metaphor a bit further, some of my patients have such chronic problems with breakage that they are spending too much time on the tarmac and only fly infrequently. This is costing money and delaying their arrival time.

It was clear to me early in my orthodontic career that loose bands, broken brackets and fractured wires would be a major deterrent to providing first-class orthodontic services for my patients. Over the past 30 years, broken appliances have remained my most vexing and chronic clinical problem, and I suspect this is true for many other orthodontists. Certainly, broken appliances exact a physical and emotional toll on the orthodontic staff, but they also carry a high economic tariff as well. My friend J. Barnett discovered a few years ago through a time-cost computer program that the recementation of a single band in his office cost $35. That cost has certainly increased by now.

Several years ago, I began to record daily the number of loose bands and broken brackets, so that I could evaluate the effect different cementation procedures might have. I have tried just about every “improvement” dental science has developed and distributed: silicate cements, acrylic cements, Durelon® cement, glass ionomer cements, bands with...
screen mesh, microetched bands, heavily-filled composites, lightly-filled composites, contact composite, light-cured composite, microetched brackets, direct and indirect bonding techniques, etc.

I even instituted a behavioral reinforcement schedule for my patients that rewarded them for non breakage. Nevertheless, over the years there was scarcely any statistical change. The daily average of patients with broken brackets and loose bands typically had ranged from 11 to 15 percent despite whatever scheme I used to reduce breakages (Figure 1). I began to believe that perhaps this was an example of what W. Edwards Deming labeled “common cause”—that is, a percentage of appliance breakage that could be considered completely normal and could be statistically expected and predicted.

Others who have kept records of patients’ broken appliances may think that the amount of breakage is too high in my office. But a factor that increases the difficulty of keeping brackets and bands in place in my geographic area is the prevalence of highly-fluorosed water supplies. Miller recently showed how impervious fluorosed teeth are to acid-etching and why they need special microetching with aluminum oxide to provide enough surface area for successful bracket bonding (Figure 2A, B, C, D). One of the changes I made that did bear some immediate fruit was the use of light-cured composites. I noticed a marked reduction in the number of brackets that broke with the insertion of the first archwire. Apparently, the degree of cure of chemically-cured adhesives is significantly lower than that of the visible light-cured resins. Fewer brackets broke immediately at the bonding appointments, but over a longer time even this improvement seemed to lose its advantage, as the overall statistics did not change appreciably.

Nevertheless, since beginning to use the Orthos® appliance about one-and-one-half years ago, I have noticed a heartening improvement in the breakage statistics. Within a year of the Orthos institution, I noticed that on many days the percentage of patients with broken appliances often dropped to single digits—a phenomenon almost unseen previously.

I was skeptical about whether a newly designed bracket system could reduce the amount of breakage, but the Orthos appliance did have features that were supposed to limit breakage such as:

- thinner and less prominent mandibular anterior brackets (Figure 3);
- offset bicuspid brackets that prevent subgingival moisture contamination (Figure 4);
- microetched band interiors that increase the surface area for cement adhesion (Figure 5A, B);
- Optimesh™ on the bracket pads that increases adhesion between the bracket mesh and the adhesive. This remains the most sensitive and vulnerable area of the bonding interface.
Since patient charts with Orthos appliances are marked in my office, it was easy to survey the breakage experience with those patients as opposed to the others. As you can see from the chart, over the past months Orthos patients have had almost three times less breakage than the patients with other preadjusted edgewise appliances (Figure 6). The test period covered all patients currently in treatment for the past 18 months. Some patients have been in treatment longer than others. The number of patients having breakage was almost equal in the two groups – 105 and 106. Of the 262 patients who wore the Orthos appliance, 40 percent had at least one experience with a broken bracket or band. This contrasts with 61 percent of the 170 patients with non-Orthos appliances. The breakage with the Orthos appliance averaged .71 breaks/patient, whereas the non-Orthos breakage averaged 2.02 breaks/patient – almost three times the breakage experience of the Orthos patients. Had the number of non-Orthos patients equaled that of the Orthos group, we would have expected around 529 breaks. Not only did a larger percentage of the non-Orthos patients experience breakage, but also more of them had multiple and repeated breaks.

I do not offer this paper as a scientifically researched study, rather as an anecdotal experience. For instance, I did not pair the patients in each group, nor did I isolate and evaluate the bonding materials used with each patient, types of cements, types of composites, locations of failure or time spent in treatment. I have not differentiated between loose bands and the breakage of bonded brackets. I have simply recorded the kind of breakage that most disrupts my daily routine – loose brackets and bands that must be replaced.

Despite a statistical analysis that shows Orthos’ complicity in the reduced appliance breakage at the 99 percent level of confidence, I realize it is possible that the Orthos appliance, per se, has little or nothing to do with this reduction in breakage. But after failing for so many years to improve this statistic, I am inclined to believe the analysis that says Orthos had something to do with it.

At any rate, to keep my patients airborne, I intend to continue:

• eliminating the use of non-Orthos appliances;

• increasing the use of Orthos appliances;

• using light-cured, polymer-reinforced glass ionomer cements for bands;

• microetching all teeth that show any evidence of fluorosis before bonding them (microetcher available from Danville Engineering, San Ramon, California, 1-510-838-7940) (Figure 7);

• microetching bracket pads of broken brackets and the teeth involved before reattaching the brackets (Figure 8);

• microetching fluorosed teeth with microetcher and Sand-Trap (available from Clinician's Choice, Dearborn, Michigan, 1-800-265-3444) (Figure 9);

• using light-cured adhesives;

continued on page 24

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**Table 6. Difference in Breakage Experience**

(2.84 x More Breakage for Non-Orthos Appliances)

<table>
<thead>
<tr>
<th></th>
<th># Patients in Study</th>
<th># Patients w/ Broken Appl.</th>
<th>% of Patients w/ Broken Appl.</th>
<th># of Broken Appl.</th>
<th>Broken Appl./Patient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Orthos</td>
<td>262</td>
<td>106</td>
<td>40%</td>
<td>187</td>
<td>.71</td>
</tr>
<tr>
<td>Non Orthos</td>
<td>170</td>
<td>105</td>
<td>61%</td>
<td>344</td>
<td>2.02</td>
</tr>
</tbody>
</table>

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* Illustration courtesy of Ormco Corporation
The treatment of congenitally missing teeth is a common problem facing the orthodontist. Approximately 7 percent of the population has some pattern of missing teeth. Mandibular second premolars are the most frequently missing teeth while maxillary lateral incisors are second-most. Obviously, any anterior tooth presents an esthetic challenge, but a maxillary anterior tooth is especially critical. It is the missing maxillary lateral incisor(s) that I would like to discuss.

The etiology of missing teeth is unclear. Genetics appears to play a major role, even though only 10 percent of all patients studied have a family history of missing teeth.

Treatment
Treatment of congenitally missing maxillary lateral incisors varies greatly. The occlusion, facial profile, patient desires and the treating doctor’s preference determine the final mechanotherapy. Missing teeth present both a functional and cosmetic concern. As a result, any treatment decision should be reached by the team of patient, parent, orthodontist and restorative dentist.

In the past there have been several approaches to treatment. The first is to substitute maxillary cuspids for the missing laterals, followed by enameloplasty combined with bonding, to eliminate bridges (Figure 1). Second are traditional bridges (Figure 2). Third is to make Maryland bridges with acid-etched metal wings (Figure 3), and fourth, implants to replace the missing laterals (Figure 4).

Dr. Richard Boyd, in private practice in Columbia, South Carolina, for 12 years, has established a solid clinical reputation as well as one for applying sound business principles and practices to the profession of orthodontics. He has lectured throughout the U.S., Europe and Canada and will be a featured speaker at the 1997 AAO meeting.
ded Pontic

### Traditional Three-Unit Bridges

- Figure 2A. Preparation for three-unit bridges.
- Figure 2B. Traditional three-unit bridges.

### Maryland Bridges

- Figure 3A. Missing laterals prior to Maryland bridges.
- Figure 3B. Facial view.
- Figure 3C. (Below) Palatal view.
- Figure 3D. After cementation of Maryland bridges.

### Implants with Crowns

- Figure 4A. Panoramic X-ray with implants in place.
- Figure 4B. Implants prepped for crowns.
- Figure 4C. Final cementation of crowns over implants.
get newsletters from a number of specialists (periodontists, oral surgeons, CPAs, speech therapists), and I quickly decide whether to save them for reading or to discard them. The decision is based upon scanning the articles' headlines for interest and pertinency to me. Therefore, I always assume that recipients of my patient newsletter (both professionals and patients) receive too much mail and make quick decisions on whether to discard it or not. So it forces me to be focused on my goals with my newsletter and respectful of the reader's time.

Goals of a Newsletter
My goals are to educate, differentiate, promote, and acknowledge.

• Education – I want my patients to know certain things about dental/orthodontic health.
• Differentiation – I want them aware of our services that distinguish us from our competition, how we are not just another office.
• Promotion – All my patients should be aware of the services and standards of care we provide.
• Acknowledgment – People appreciate seeing their name in print if I get a chance to mention them.

In addition to these four goals, I also need the newsletter to be producible with minimum time and expense. My staff does not produce it – I do.

Format
We have averaged two to three newsletters per year. The format is usually two pages, 8½” x 11”, printed on both sides, so that it is really four pages. For printing efficiency, we use a single 11” x 17” sheet printed on both sides, then folded. The layout is designed to be both mailable and yet attention-getting in a literature rack.

Page 1 has our masthead (including title, logo, address, specialties, office hours, and issue number), the mailing information section (bulk mail permit preprint, room for address label), and the lead article.

Page 2 has the finish of the lead article and another article or two, with a joke or song refrain at the bottom. Pages 3 and 4 are similar to page 2.

Article Topics
For years I have collected articles in print, other peoples newsletters, dental cartoons and jokes, etc. I keep them in separate envelopes, by topic groupings. The envelope headings are Technical Articles, Administrative and Financial, Patients, General Health, Community, Home Care, Humor, and Ads (products or services I want to promote). Within each envelope there are many topics. For example, within the Technical Articles envelope, I have articles on adult treatment, orthognathics, siblings needing treatment, sterilization, what problems need treatment, snoring, bleaching, physical therapy, nonextraction orthodontics, ages for treatment, fiberto-momies, permanent retention, and so on (I have over 50 topics identified in this envelope). I made a list of all the topics in each envelope and prioritized each topic A, B, or C. Then I eventually include the A’s and B’s in a newsletter.

I have used two approaches for the topic contents of the newsletters. One approach (learned from Dr. Randy Moles in Racine, Wisconsin) is to have an overall theme for an issue, such as dental care for young children, in which the topics include baby teeth, fluoride, pacifiers, thumb sucking, tooth brushing, tetracycline, diet, first dental visit, first orthodontic visit, tooth avulsion, sealants, mouth breathing, early ortho vs. serial extraction, etc. This type of approach is useful in a marketing program wherein the doctor talks to parent groups and promotes to pediatric specialists. A similar theme could be used for TMJ, adult orthodontics, snoring, etc.

Specialized issues like this require a longer newsletter, so it may be expanded to six or eight pages (from the usual four).

The other approach is to try to balance an issue with one article from each envelope, such as snoring (Technical), prominent patients by profession (Patients), sports sponsorships we’d like to do (Community), our punctuality (Administrative), foods to enjoy and foods to avoid (Home Care), does snoring shake your roof timbers? (Ad), smokeless tobacco (Health), and a cartoon with an orthodontic theme (Humor). We have usually included jokes and/or song refrains from some popular songs as a way to lighten the tone. I have stayed away from recipes and biographical articles about myself or my staff, because I would not read them in someone else's newsletter. Not all authors agree with this opinion.
Preparation of the Newsletter

I select topics from the envelopes. I rough out a dummy mockup, deciding which articles to place where. I write the articles in longhand, using the references in the envelopes. This usually takes me one Saturday.

I have a professional typesetter prepare the pages (at $35 per page, using his Mac). I proof and revise the copy, which he corrects. The typesetter sometimes provides clip art, and I frequently will provide illustrations from various materials on hand. The printer prints the newsletter; usually we use black ink on white paper. For the special theme newsletters we use two ink colors, and it really livens the appearance. The printer also folds the newsletter (and collates if more than one piece of paper).

Distribution

Active patients are given a copy during their appointment, with a brief explanation. This encourages them to read it or get it into the hands of someone who should read it. It saves the cost of mailing. For retention and observation patients, we print mailing labels, attach them to the newsletters and take them to a local mailing house whose bulk mail permit is preprinted on the newsletter. They are sent with “Address correction requested” preprinted, so that we can update our computer files if the patient has moved.

We also send the newsletters to our referring dentists, and in the case of special theme newsletters, we send selected dentists several for their reception room, along with an appropriate cover letter.

Costs

Typesetting costs around $140 for four pages. Printing and folding costs around $200 for 1,000. Mailing costs around $130 for 650. The time is around a day-and-a-half of my time.

Results

Depending on the article contents, we get inquiries regarding TMJ splints, bleaching, snore devices, early exams for children, etc. We manage to examine essentially every sibling of patients in our practice. And we have people talking about us to others, because we have familiarized them with what we do and how we are different from other offices.
the lingual cusps. This is partially due to the need for gingival placement of the lower buccal brackets and tubes. This is true when full-sized edgewise archwires are used, but with smaller edgewise archwires, bracket tolerances would again indicate the need for higher torque values in this region. The loss of cortical anchorage and muscular anchorage in the lower arch is exacerbated when the lower is undertorqued using undersized edgewise wires. This is simply another example of how static tooth position and morphology measurements are good indicators of torque averages but poor indicators of the response to specific mechanics and bracket-to-wire tolerances in determining the ultimate position of the dentition.

The Extra Goodies
1. Gingivally offset bicuspid brackets. The idea that retention is enhanced by placing a small bracket on a large pad is not new. Bracket retention and proper placement are greatly enhanced with gingivally offset bicuspid brackets. I immediately saw the merit of these on the second bicuspid, the last tooth to erupt. It makes early direct bond placement possible. I have found this to be of great value in both the upper and lower bicuspud regions. It allows for more uniform bracket placement because the rounded edge of the pad is closer to the cusp tip.

2. Gingivally offset cuspid brackets. So often it is impossible to correctly place a cuspid bracket on an erupting or partially blocked cuspid. This problem is largely solved by using gingivally offset cuspid brackets. Although we don’t use these on all cuspids, it quite often prevents having to place a bonded button (or series of buttons) on an erupting cuspid. When glass ionomer cements are

The Bios Approach... Finesse Over Force

Taking advantage of the unprecedented precision of Orthos’ “ideal” anatomical averages, Dr. Jim Hilgers designed the Bios System to allow for earlier torque control with lighter wires. This helps ensure torque control throughout treatment when needed, lessens dependence on full-size edgewise wires and facilitates techniques that use function more and dominance mechanics less. Bios differs from the Orthos prescription by virtue of its increased torque in upper incisors and in the mandibular posterior segment, as well as lingual root torque in upper and lower cuspids. Bios also affords the distinguishing advantages of Orthos responsible for its rapidly growing popularity around the world:

• Compensation is cut into the slot of the lower cuspid brackets and the shape of the archwire is adjusted to sweep as close to the tooth surface as practical. The profile of the lower incisor bracket is reduced as is the previous frequent requirement of first order bends mesial to the lower cuspid brackets:
  • Progressive distal tip in all lower anterior brackets achieves uniformity in root spacing.
  • Lower bicuspud brackets with distal root tip achieve balanced proximal contacts and correct root alignment.
• Molar tubes are designed so that molars occupy the least amount of arch space and molar interdigitation is improved:
  • Distal root tip is incorporated into upper 2nd bicuspud brackets.
  • Thicker 2nd bicuspud brackets better synchronize with 1st bicuspids and molars.
  • Moderately increased buccal root torque on maxillary posterior segments prevents lingual cusps from dangling.
• Arch forms and brackets are computer-derived from skeletal analysis and are integrally designed to coordinate the dental arches:
  • Bicuspid are available gingivally offset with occlusally extended pad to increase the bond area for superior retention. Additionally, the Optimesh coating increases bond strength by over 35 percent.

The Bios System incorporates the range of Orthos archwires, including the new Titanium Niobium/FA® finishing arches, and a wide choice of tubes, including the new Accent™ tubes that simplify archwire entry and help coordinate both buccal segment bracket placement and molar integration. Whether you’re a clinician who prefers lighter wires or an Orthos user seeking an auxiliary appliance for adult deep bite cases or cases with strong musculature patterns where higher torque values are needed, Bios will benefit your practice. Order information for Bios brackets and tubes is provided on Page D of the Center Section.
Table 3. Schematic demonstrating bracket torque and angulation for the Bios Light Wire System. Note the integration of Accent™ nonconvertible buccal tubes and the absence of headgear tubes. Bands with headgear tubes are only utilized in cases where a headgear is being used. The clinician can select double buccal tubes on both the upper and lower first molars to allow the use of secondary or segmental archwires. Convertible tubes are also available for those who prefer to use them.
used for bonding, the gingival portion of the pad can actually be placed subgingivally and still cured properly.

A study showed that 30 percent of the adjustment time while the patient was in the office was spent doing one simple thing – tying on Kobayashi ties for elastics. Small Hemi Hooks can be a great timesaver but they have drawbacks, especially when used on all posterior teeth. Cleaning and tying are more difficult and bracket placement can be somewhat compromised. These problems are by and large alleviated by ordering Hemi Hooks in just the right places. The placements of choice are the mesial of upper and lower cusps and the distal of lower bicuspids.


5. Accent buccal tubes integrated with Bios brackets. The use of Accent tubes on both first and second molars simplifies archwire placement and molar rotation while eliminating the need for disarticulating or tying in convertible molar tubes. These unobtrusive tubes (see Clinical Impressions, Vol. 5, #1, for my article on Accent tubes), with their funnelled mesial opening, allow for easy insertion of both superelastic leveling archwires and more rigid ideal archwires further along in treatment.

Conclusion
The Bios light wire system offers the clinician who is interested in using lighter forces and wires an entry to Orthos technology. This highly sophisticated system affords a clinical efficiency that is nonpareil. The next article will focus on the retention proforma.

George Santayana once said, “The empiricist is someone who believes in what he sees, but he is better at believing than seeing.” At present, I have neither the resources or time to investigate thoroughly the effect the Orthos appliance is having on the breakage of brackets and bands. Nevertheless, from what I have seen and measured so far, I must label myself a cautious empiricist who is finally seeing a measurable reduction in breakage and who believes the Orthos appliance somehow bears a portion of responsibility for it.

1 Barnett, J. W.: Personal communication.
is equivalent to that of a BB** (Figure 5). In addition to the conservative nature of this restoration, the all-porcelain pontic and wings provide for an exceptional esthetic result (Figure 6). Lastly, to add a more natural look, the tissue is “scooped out” upon placement of the final restoration so that the pontic appears to come right out of the tissue (Figure 7). It is important to do this on the model in the lab prior to construction of the pontic – not in the mouth – before insertion. The healing gingiva recontours nicely around the final restoration (Figure 8).

An even newer option is belleGlass HP™*** a conservative, strong (polymer glass) and esthetic resin-bonded pontic. It is the latest esthetic restorative and provides high flexural strength, affording the best of both porcelain and composite restorations. The superior color depth, light absorption and enamel-like luster make the belleGlass HP restoration virtually disappear in the mouth. The material is cured under high-pressure nitrogen at 280°F and wears at a rate of only 1.2 micrometers per year, but it will not destroy natural opposing teeth.

**Conclusion**

While there are many options for the practitioner today, dental materials continue to improve and provide even more options for our patients. These conservative, strong, esthetic options offer an alternative to prepping for full porcelain-fused-to-metal three-unit bridges or the use of implants on an adolescent teen. This advancement in dental materials, coupled with good restorative work and a team approach to management of this problem, provides the best option available for our patients.

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* IPS Empress is a ceramo-glass material from Ivoclar Williams, Amherst, New York.
** Special thanks to Dr. Malcolm Gordon, Columbia, South Carolina, for providing some of the clinical slides of the restorative process.
*** belleGlass HP is a polymer-glass material from belle de st. claire, Orange, California.
The last form of IDT communication is visual communication. This includes photographs, radiographs, study casts, diagnostic wax-ups, diagnostic provisional restorations and other means to provide information that is difficult to communicate verbally. These sources of visual communication can be invaluable in IDT and should be standardized, organized and readily accessible to all team members.

One of the most common sources of breakdown in multidisciplinary therapy is poor communication due to the fractionization of patient records and associated treatment information among the various team members. This can lead to great confusion about what diagnostic records have already been performed and as to where the patient is in the course of his or her treatment. To help prevent these breakdowns in communication, an IDT Record can be utilized which contains all the diagnostic and treatment records, progress notes and any other associated information in one concise, formatted reference. The IDT Record precedes the patients to all the different providers and creates the common thread that keeps the team organized and going in the same direction while helping to prevent repetition of diagnostic records. The proven effectiveness of the IDT Record can greatly reduce the amount of correspondence and team conferencing.

To further focus the team, the history and diagnostic forms of all the individual members can be compiled and standardized so that everyone on the team uses the same forms. This establishes a common starting point, and providers can ask...
questions related to different disciplines that help determine who should be on the team. Copies of these completed forms should be sent along with the IDT Record to the other team members before their specialized evaluations, so that the patient has to fill out only one form, even though they may see three or four different providers. Little things such as this, the organization of the IDT Record and the obvious effectiveness of the interdisciplinary team, can significantly enhance patient confidence in the team and can help motivate them toward comprehensive care.

The newest addition to IDT is the implementation of electronic communication and it is already having a major impact. Electronic communication uses fax machines, voice mail, word processing, electronic patient-records storage, image manipulation and computer networking, and now, even the Internet to reduce the burden IDT places on its providers and their staffs (Figure 6). An example is the use of voice mail or e-mail for conferencing with other providers in their offices. We are all familiar with the frustration of playing phone tag with other doctors to discuss patients and the overall interruptions that phone calls make on our daily schedule. A centralized team voice mail or e-mail system almost completely alleviates this by allowing concise messages to be left by one provider and then reviewed, answered or hard copied by the other at his or her leisure. Soon providers, in their offices or homes, will be able to effectively conduct video conferences over the Internet with the patients’ records and live video images of the team members being displayed on their computer monitors.

Word processing with sophisticated IDT databases and question/answer streams now empower all team members to easily take part in highly structured and efficient IDT correspondence at chairside without writing or dictating.

But probably the most useful and exciting area of electronic communications is that of electronically storing and managing patient records. These records include all correspondence, progress notes, patient forms and visual information such as radiographs and patient images. These can be recorded easily and stored at one site, then shared and utilized by any authorized team members in their offices or homes through the use of modems, storage medium, the Internet, fax machines and even inexpensive hard copies. With electronic communication, the team no longer has to worry about sharing and manually transferring one set of records. Instead, every team member has immediate electronic access to all patient records and the exact status of patient treatment.

When performed properly, IDT can build and strengthen professional and patient referral sources, increase practice effectiveness and profitability, lower provider stress and elevate the patients perceived value of therapy and the providers’ reputations. The three hallmarks of IDT - common comprehension, sequential sequencing and extensive communication – and the recent addition of electronic communication have been instrumental in elevating my team’s level of interdisciplinary care, as well as the overall enjoyment of our profession. I hope they will do the same for yours. The long-term primary and secondary effects of IDT can make it a highly effective and professional means for positioning your practice for both now and in the future.

The bottom line about IDT is that even though all the disciplines and all the individual providers have much to gain from an interdisciplinary dentofacial approach, the most important and greatest beneficiaries of all are our patients.

For more information on Interdisciplinary Dentofacial Therapy (IDT), setting up an IDT study group, IDT forms, upcoming IDT lectures, etc., contact:

IDT Systems
1915 Green Acres Road
Fayetteville, AR 72703
Fax (501) 521-6141
or
www.Dental-IDT.com

Interdisciplinary Dentofacial Therapy: A Comprehensive Approach to Optimal Patient Care

Richard Roblee, D.D.S., M.S.
with a foreword by Peter E. Dawson, D.D.S.

The IDT approach affords today’s orthodontist the clinical, practice management, time management and marketing benefits critical to properly positioning the practice to meet the challenges of the future. From diagnosis to maintenance, Interdisciplinary Dentofacial Therapy provides the concepts and methods that allow dental practitioners in all disciplines to create professionally integrated teams that consistently maximize treatment outcomes. Richly illustrated, the book presents cases in which IDT provides optimum outcomes for complex dentofacial problems and a detailed model, as well as practical suggestions, for establishing and coordinating an interdisciplinary team. It also includes extensive material on communication and documentation using the latest technologies.

Interdisciplinary Dentofacial Therapy is the most complete text available on IDT, with 236 pages and 473 illustrations (442 color). It is available for $128 from Ormco (see order information on Page D of the Center Section) or from Quintessence Publishing Co., Inc., 551 North Kimberly Drive, Carol Stream, IL 60188-1881; Tel: (800) 621-0387 or (708) 682-3223; Fax: (708) 682-3288.