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MBT

A Clinical Review of The MBT Orthodontic Treatment Program

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It was determined that new improvements in the pre-adjusted appliance were needed.
Good Luck Rich Iverson
3M Unitek is sad to say goodbye to our President and General Manager, Mr. Rich Iverson, but we are happy for him as he assumes his new responsibilities in his appointment to head up the Medical Resource Technology Division at 3M. In his 5 years with us, Rich has helped to smooth the transition as we evolved from Unitek into 3M Unitek and became the unquestionable leader in orthodontics as well as the world’s largest orthodontic manufacturer. This growth has been due to our strategic goal of developing and maintaining the best customer relationships in the Orthodontic industry. Good luck Rich.

Welcome Pat Ford
We are also very fortunate to be able to introduce our new President and General Manager, Mr. Patrick B. Ford. Pat is a seasoned manager with over 30 years experience with 3M. Pat has a strong background in health care, sales operations, international market development and subsidiary management. Both his track record and background make him well qualified to guide 3M Unitek’s continued growth and market leadership worldwide. He’s extremely pleased to join us at this exciting time, as 3M Unitek launches innovative new products such as Clarity® Metal-Reinforced Ceramic Brackets and the MBT™ Appliance System. 3M Unitek is also exclusive distributor for the AJ-O-DO™, J CO, as well the Angle Orthodontist on CD-ROM. These, and other orthodontic products, will help user in our upcoming 50th anniversary celebration in 1998. Pat has firmly endorsed and is committed to 3M Unitek’s credo of providing superior service to our customers. Please join us in welcoming Pat Ford as the new leader of 3M Unitek and creator of orthodontic products and services to make your life easier.

3M Unitek Now On The Web
A further demonstration of 3M Unitek’s commitment to the future can be found on our brand new web page. We invite you to stop by and browse.

WELCOME
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http://www.3M.com/unitek

3M Dental Receives ‘97 Baldrige Award
3M Unitek congratulates 3M Dental for receiving the 1997 Malcolm Baldrige Quality Award. 3M Dental is the first division within 3M and only the second company in health care to receive this coveted award, which certifies a company’s ongoing commitment to business excellence.

MBT Text Support
Two text books, “Orthodontic Treatment Mechanics and the Preadjusted Appliance” & “Orthodontic Mangement of the Dentition with the Preadjusted Appliance,” both co-authored by Dr. John Bennett and Dr. Richard Mclaughlin, support the MBT philosophy, but are not Edition 1 and Edition 2 textbooks. Rather, each are textbooks on entirely different subjects.

1. Basic orthodontic mechanics on Class I extraction and non-extraction types of cases.
2. General information on bracket positioning and basic information on the pre-adjusted orthodontic appliance.
3. Information on the transition from Standard Edgewise to the pre-adjusted appliance.
4. Information on anchorage control and leveling and aligning of the orthodontic case.
5. Information on overbite control with emphasis on correction of deep overbites.
6. A limited amount of information on the very large subject of overjet reduction.
7. Information on the mechanics of space closure in extraction cases.
8. Some general information on the subject of finishing and detailing of orthodontic cases.

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About the Authors

Dr. Richard McLaughlin
San Diego, California

Dr. Richard McLaughlin completed his orthodontic training at the University of Southern California in 1976. Since then he has been in the full time practice of orthodontics in San Diego, California. While developing his own practice, he was an associate of Dr. Lawrence F. Andrews for seven years. Dr. McLaughlin has lectured extensively on the pre-adjusted appliance in the United States, Europe, South America, Asia and Australia with orthodontic colleagues from London, England, Dr. John Bennett, and from São Paulo, Brazil, Dr. Hugo Trevisi. He is a member of the Pacific Coast Society of Orthodontists, the American Association of Orthodontists, a Diplomate of the American Board of Orthodontics and a full member of the Edward H. Angle Society. In addition, Dr. McLaughlin is an associate clinical professor at the University of Southern California, Department of Orthodontics.

Dr. John Bennett
London, England

Dr. Bennett completed his orthodontic training at the Eastman Dental Institute in London, England in 1972. Since that time he has been in the full time practice of orthodontics in London, England. For the past 20 years he has worked exclusively with the pre-adjusted appliance system, and with Dr. McLaughlin has held a particular interest in evaluating and refining effective treatment mechanics utilizing light forces. These concepts have developed and have included the more recent contribution from Dr. Trevisi. Their well tried and effective treatment approach has seen widespread acceptance. Dr. Bennett has lectured internationally on the pre-adjusted appliance for a number of years. Together with Dr. McLaughlin he has published numerous articles and has co-authored two orthodontic textbooks, both of which have been well received. He is currently a part-time clinical instructor at the post-graduate orthodontic program at Bristol University in England.

Dr. Hugo Trevisi
São Paulo, Brazil

Dr. Hugo Trevisi received his dental degree in 1974 at Lins College of Dentistry in the state of São Paulo, Brazil. He received his orthodontic training from 1979 to 1983 at that same college. Since that time he has been involved in the full time practice of orthodontics in Presidente Prudente, Brazil. He is a Faculty Member at the University of Odontology and Dentistry in Presidente Prudente. He has lectured extensively in South America and Portugal and has developed his own orthodontic teaching facility in Presidente Prudente. Dr. Trevisi has 20 years of experience with the pre-adjusted appliance. He is a member of the Brazilian Society of Orthodontics and the Brazilian College of Orthodontics.

A Clinical Review of the MBT Orthodontic Treatment Program

By Dr. Richard McLaughlin, Dr. John Bennett and Dr. Hugo Trevisi

MBT Treatment Philosophy

The MBT philosophy of orthodontic treatment has been developed over a twenty year period of time and has involved the combined efforts of its three principle clinicians, along with the help of numerous other clinician colleagues. Their philosophy places emphasis on four critical areas of orthodontic treatment: 1. Treatment mechanics, 2. The pre-adjusted appliance, 3. Bracket placement technique, and 4. Arch form and archwire sequencing.

The MBT philosophy is supported not only by a custom designed appliance, but also by worldwide continuing educational opportunities as well as a long awaited textbook.

Use of Light, Continuous Forces

Intermittent forces have proven to be relatively ineffective in bringing about dental tooth movement; on the other hand, continuous forces are most effective in moving dental structures. Heavy forces have been shown to have a detrimental effect on the root structure while lighter forces have shown to maximize biologic response and efficacy in tooth movement. Therefore, treatment planning is directed at providing light continuous forces on the teeth that need to be moved at any given time during orthodontic treatment.

Anchorage Control

A combination of extra-oral (facebows and "J" hooks) and intra-oral (palatal bars, lingual arches, Class II elastics, Class III elastics, Nance arches, Utility arches, etc.) methods of anchorage control are utilized in the MBT system.

Leveling and Aligning

The leveling and aligning stage of treatment consists of the following techniques:

• Use of Nitinol Heat-Activated nickel titanium wires during the aligning process
• The use of canine lace backs for cuspid control and retraction
• The use of bend backs to control forward movement of incisors
• The use of open coil springs to create space for blocked out teeth
• Early establishment and maintenance of arch form, followed by bringing malposed teeth into the primary arch form without arch form distortion

Overjet (Class II-Class III) Correction

Class II and Class III correction is accomplished by using a combination of headgear, Class II and Class III elastics, and functional appliances. These appliances are used in combinations that bring about the best opportunity for continuous forces on the dento-alveolar processes.
Finishing
Finishing involves three main processes:

- The correction of mistakes made earlier in treatment (bracket positioning, torque control, anchorage control etc.)
- Over-correction as needed (periodontal, alveolar-sutural, muscular, and growth)
- Settling of cases in light wires for approximately six weeks (minimum) prior to debanding

Retention
Retention is accomplished using a combination of bonded retainers for the lower anterior segment, wrap around upper retainers to allow for continued arch settling, and some positioners as upper retainers to allow for continued continued arch settling, and some positioners as upper retainers to allow for continued

2. MBT Appliance
Bracket System
Victory Series™ Brackets – Figures 1, 2, 3 show a patient with large teeth, a difficult malocclusion and poor hygiene. The larger bracket will maximize base surface area and increase control.

Clarity™ Brackets – Figures 4, 5, 6 show Clarity metal-reinforced ceramic brackets on her upper teeth, aesthetic brackets for an aesthetic appearance during treatment.

Full Size Twin Brackets – Figures 7, 8, 9 show a patient with large teeth, a difficult malocclusion and poor hygiene. The larger bracket will maximize base surface area and increase control.

Editor: What role does the tapered, ovoid and square wire arch forms play in preventing relapse?

Dr. McLaughlin: With the edgewise appliance, most orthodontists custom-tailored archwires to the patient’s arch form. When the pre-adjusted appliance was developed, there seemed to be an unwritten assumption that one specific arch form needed to be used for that system, and that arch form was the most appropriate.

After twenty years of using the pre-adjusted appliance, it is apparent that customizing the arch form to the individual patient is what is really most important. Failure to do this will result in relapse. In and out dimension covered some problems, but not all of them. What would like to see is a return to a customized arch form for each patient without the need to overstock office inventory or waste time in unneeded wire bending. This seems to be the best method of efficiently achieving stable and aesthetic end results.

REFERENCES
5. McLaughlin, R.P. and Bennett, J.C.: “Bracket Placement - Examination of Class II, Class III and Asymmetrical treatment options involving each individual tooth. Thus, specific clinical situations related to incisors, cuspsids, 1st and 2nd bicuspids, and 1st and 2nd molars are discussed. The extraction versus non-extraction issue is reviewed in detail. The seminar will also provide an in-depth review of the material in Dr. Bennett’s and Dr. McLaughlin’s newest textbook, Orthodontic Management of the Dentition with the Preadjusted Appliance.

Occlusion and the TMJ in Orthodontic Treatment
Correction of malocclusion to a position in which the condyles are in the correct position can be likened to the proper construction of a house’s foundation. Without it, the house is subject to future instability, as is the malocclusion treated to the incorrect condyle position.

This seminar presents a comprehensive review of the management of orthodontic patients with Temporo-Mandibular Disorders. The concept of ideal occlusion is discussed as well as its relationship to tempo-mandibular disorders. The subjects of diagnosis and treatment planning, splint therapy, and post splint management with orthodontic appliances is discussed in detail.

Diagnosis, Treatment Planning and Treatment Mechanics
This seminar brings together the information from the previous four seminars by placing emphasis on the all important area of diagnosis and treatment planning. The topics covered in previous programs are all relevant to this seminar, which looks at a wide variety of treatment situations. Each case is evaluated from a diagnostic point of view, and participants are invited to make their own judgments concerning treatment planning. The treatment which was completed is then reviewed in a step by step manner, with the results being evaluated. Class I, II and III and Asymmetrical treatment options are reviewed as well.
The use of the .016" Nitinol Heat-Activated wire to replace multi-strand and the .024" round wire has been most satisfactory. This initial arch wire can be placed with ease in most cases, and can be retired one or two times at 4 to 6 week intervals.

As Figure 48, 49, 50, 51 illustrate, engagement of a Nitinol Heat-Activated wire can be facilitated with use of Endo Ice®, followed by tying in with a steel ligature. Because of rapid cooling, this procedure can be performed quickly and comfortably.

The remaining wire used was an .019 x .025" rectangular stainless steel. Use of Nitinol Heat-Activated wires in my orthodontic practice has resulted in much less chair time involved in each visit. Secondly, the intervals between patient visits has been slightly increased. Thirdly, tooth movement is actually much more efficient, and as a result, the aligning phase of treatment is completed more rapidly. This in turn allows me to complete overbite control, overjet reduction and space closure sooner in treatment, which in turn allows more time for finishing and detailing of the case, which enhances treatment end result quality.

The .019 x .025" Nitinol Heat-Activated can also be retired at the same 4 to 6 week intervals.

Table 1 shows anterior tip measurements: Andrews’ non-orthodontic normal study1, two Japanese studies2,3, the MBT Versatile+ Appliance, the Original Straight-Wire Appliance4, and the Roth Appliance5. The anterior tip measurements for the original Straight-Wire Appliance are all greater than those found in Andrews’ research. This was presumably done to control what Andrews6 referred to as the “wagon wheel” effect7 that torque places on anterior crown tip. This is somewhat similar to the compensating anti-tip, anti-rotation and power arms built into the extraction brackets for the treatment of bicuspid extraction cases.

As palatal root torque is added to the anterior segment, mesial crown tip is reduced. It has been observed by the authors that with light continuous force mechanics, tip is well controlled by the pre-adjusted appliance. Using “lace-backs” and “bendbacks” during leveling and aligning, and elastic module “tie-backs” during space closure, very little adverse tipping occurs during these stages of treatment. By the finishing stage of treatment, completely levelled upper and lower rectangular wires are normally in place, indicating that full expression of both anterior and posterior crown tip has occurred. Thus, additional tip is not seen to be necessary in the anterior segments.

Also, additional anterior tip creates a significant drain on molar anchorage, Figure 10, 11. If the original research values for tip are used, a total of 10° less distal root tip in the upper anterior segment and 12° less distal root tip in the lower anterior segment is needed (compared against the Original Straight-Wire Appliance). Thus, Figures 10 and 11 show the difference in root positions with MBT Versatile+ Appliance and two SWA.

Table 2

<table>
<thead>
<tr>
<th>Anterior Tip</th>
<th>Upper Anterior Tip</th>
<th>Lower Anterior Tip</th>
</tr>
</thead>
<tbody>
<tr>
<td>Same 4 to 6 week intervals</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Figure 47 Nitinol Heat-Activated .019 x .025" replacing .016", .018" and .020" round stainless steel.

* Figure 48 Nitinol Heat- Activated .016" replacing .015" and .0175" multi-strand steel and .014" stainless steel.
from the buccal groove (Fig. 14c) and occlusal plane. This introduces the correct use a 0° crown tip bracket with the band parallel to the occlusal plane, it provides for slightly reduced band material frequently necessary to trim band material makes band positioning more difficult.

It also provides for slightly reduced anchorage needs for the upper arch.

The buccal groove is the reference for crown tip in the upper molars. This buccal groove shows a 5° angulation to a line drawn perpendicular to the occlusal plane. There are two methods of achieving 5° of effective tip in the upper first and second molars.

If a 5° bracket is selected, the band must be seated more gingivally at the mesial aspect to position bracket wings parallel to buccal groove. (Fig 14a). This makes band positioning more difficult. When using these 5° brackets, it is frequently necessary to trim band material from the distal of the band. If the 5° bracket is used and the band is placed parallel to the occlusal plane, it provides an excessive 10° of actual tip to the crown tip for the reasons described above.

The authors observed that torque is rather poorly controlled with the pre-adjusted appliance system. This is due to the fact that the torque movement is a difficult one since less than 1mm of contact between the bracket and the archwire must bring about this movement. In general, here lies the greatest challenge to bracket design in the pre-adjusted appliance. In the majority of orthodontic cases, because of this lack of torque control, torque tends to be lost in the upper incisors during overjet reduction and space closure. The lower incisors frequently tend to procline forward during Curve of Spee leveling and when eliminating lower incisor crowding. This incisor torque factor, along with the tip and tooth size factors, frequently prevents posterior teeth from fitting into a Class I relationship.

The proper selection of an arch form for each patient as well as the development of a general archwire sequencing system in the orthodontic practice can greatly increase treatment efficiency and also provide greater stability in completed cases.

For the MBT Versatile+ Appliance, the 0° of tip, as opposed to 2° of tip, was selected for all upper bicuspid brackets to place the crowns in a slightly more upright position, (in a Class I direction). It also provides for slightly reduced anchorage needs for the upper arch.

Table 2 Upper Posterior Tip

<table>
<thead>
<tr>
<th>Tip</th>
<th>Andrews’ norms 5°</th>
<th>Roth SWA 2°</th>
<th>Original SWA 2°</th>
<th>MBT Versatile+ 0°</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st 1st 2nd 2nd</td>
<td>5.5° 5.5° 3.5° 3.5°</td>
<td>5.5° 5.5° 3.5° 3.5°</td>
<td>5.5° 5.5° 3.5° 3.5°</td>
<td>5.5° 5.5° 3.5° 3.5°</td>
</tr>
</tbody>
</table>

Table 3 shows tip measurements for the lower bicuspid and lower molars: Andrews’ non-orthodontic normal study1, two Japanese studies 2, 3, the MBT Versatile+ Appliance, the Original Straight-Wire Appliance4 and the Roth Appliance5.

The authors prefer to maintain 2° of mesial crown tip in the lower bicuspid. Angling these teeth slightly forward in this manner moves them more in a Class I direction; 2° of tip is also preferred in the lower first and second molars. This is accomplished in a manner similar to the tip placed in the upper molars. The lower buccal groove lies 2° off of a line drawn perpendicular to the occlusal plane. As with the upper molars, introducing this 2° of tip to the lower molars can be accomplished by placing 0° tip brackets parallel to the occlusal plane. In summary then, the lower bicuspid brackets show 2° of mesial crown tip and the lower molar brackets show 0° of crown tip (2° effective tip) with the bands placed parallel to the occlusal surface.

The MBT Versatile+ and the Roth Appliance6 have been extremely easy to use and are a welcome addition to the MBT system. The Narrow Contoured Molar Bands have been extremely easy to use and are a welcome addition to the MBT system.

The MBT Versatile Appliance, the Original Straight-Wire Appliance6 and the Roth Appliance6 have been extremely easy to use and are a welcome addition to the MBT system.
3. Bracket Placement

Prior to the development of the pre-adjusted appliance, edgewise brackets were placed using gauges which set the bracket a specific number of millimeters from the incisal or occlusal tooth surface. When the pre-adjusted appliance was developed, the center of the clinical crown became the vertical reference for bracket placement, and most orthodontists discontinued the use of gauges. The brackets were therefore placed by visually selecting the center of the clinical crown. Unfortunately, this method resulted in significant errors relative to vertical placement. For example:

- Gingival variations, such as partially erupted teeth, labially and lingually (palatal) displaced roots, and gingival inflammation led to placement errors.
- Large teeth (upper central incisors) and small teeth (upper lateral incisors) within the same patient led to obvious errors when brackets were placed in the center of the clinical crown.
- Incisal or occlusal fractures and wear, as well as teeth with extremely tapered and pointed cusps, led to bracket placement errors.

The use of a bracket placement chart (developed in 1994), as well as pre-adjusted Dougherty gauges, Figures 37 and 38, dramatically reduces bracket placement errors in the vertical dimension. Figures 39 through 44 show placement technique. We have experienced approximately a 50-60% reduction in the need to reposition brackets during treatment using this very simple but effective system.

In Figure 16 the MBT™ Versatile+ Appliance provides increased palatal root torque for the upper incisors (a, b, and increased labial root torque for the lower incisors (c), the most common requirements in orthodontic cases.

**Upper Cuspid, Bicuspid and Molar Torque**

Table 5 shows upper cuspid, bicuspid and molar torque values: Andrews' non-orthodontic normal study, two Japanese studies, the MBT Versatile+ Appliance, the Original Straight-Wire Appliance™ and the Roth Appliance.

<table>
<thead>
<tr>
<th>Cuspid</th>
<th>1st Bl</th>
<th>2nd Bl</th>
<th>1st Molar</th>
<th>2nd Molar</th>
</tr>
</thead>
<tbody>
<tr>
<td>Andrews' norms</td>
<td>-7.0°</td>
<td>-7.0°</td>
<td>-7.0°</td>
<td>-14.0°</td>
</tr>
<tr>
<td>Sebata's data</td>
<td>0.7°</td>
<td>-6.5°</td>
<td>-6.5°</td>
<td>-1.7°</td>
</tr>
<tr>
<td>Watanabe's data</td>
<td>-5.2°</td>
<td>-6.0°</td>
<td>-7.2°</td>
<td>-9.6°</td>
</tr>
<tr>
<td>MBT Versatile+</td>
<td>-7.0°</td>
<td>-7.0°</td>
<td>-7.0°</td>
<td>-14.0°</td>
</tr>
<tr>
<td>Original SWA</td>
<td>-7.0°</td>
<td>-7.0°</td>
<td>-7.0°</td>
<td>-9.6°</td>
</tr>
<tr>
<td>Roth SWA</td>
<td>-2.0°</td>
<td>-7.0°</td>
<td>-7.0°</td>
<td>-14.0°</td>
</tr>
<tr>
<td>Sebata's data</td>
<td>-1.0°</td>
<td>-6.5°</td>
<td>-6.5°</td>
<td>-1.7°</td>
</tr>
<tr>
<td>Watanabe's data</td>
<td>-5.2°</td>
<td>-6.0°</td>
<td>-7.2°</td>
<td>-9.6°</td>
</tr>
<tr>
<td>Andrews' norms</td>
<td>-7.0°</td>
<td>-7.0°</td>
<td>-7.0°</td>
<td>-14.0°</td>
</tr>
</tbody>
</table>

**Lower Cuspid, Bicuspid and Molar Torque**

Table 6 shows torque values for lower cusps, bicusps and molars from Andrews' non-orthodontic normal study, two Japanese studies, the MBT Versatile+ Appliance, the Original Straight-Wire Appliance™ and the Roth Appliance.

<table>
<thead>
<tr>
<th>Cuspid</th>
<th>1st</th>
<th>2nd</th>
<th>1st Molar</th>
<th>2nd Molar</th>
</tr>
</thead>
<tbody>
<tr>
<td>Andrews' norms</td>
<td>-11.0°</td>
<td>-17.0°</td>
<td>-22.0°</td>
<td>-30.0°</td>
</tr>
<tr>
<td>Sebata's data</td>
<td>-11.1°</td>
<td>-18.4°</td>
<td>-21.8°</td>
<td>-31.2°</td>
</tr>
<tr>
<td>Watanabe's data</td>
<td>-11.0°</td>
<td>-17.0°</td>
<td>-22.0°</td>
<td>-30.0°</td>
</tr>
<tr>
<td>MBT Versatile+</td>
<td>-6.0°</td>
<td>-12.0°</td>
<td>-17.0°</td>
<td>-20.0°</td>
</tr>
<tr>
<td>Original SWA</td>
<td>-11.0°</td>
<td>-17.0°</td>
<td>-22.0°</td>
<td>-30.0°</td>
</tr>
<tr>
<td>Roth SWA</td>
<td>-6.0°</td>
<td>-12.0°</td>
<td>-17.0°</td>
<td>-20.0°</td>
</tr>
<tr>
<td>Sebata's data</td>
<td>-11.1°</td>
<td>-18.4°</td>
<td>-21.8°</td>
<td>-31.2°</td>
</tr>
<tr>
<td>Watanabe's data</td>
<td>-11.0°</td>
<td>-17.0°</td>
<td>-22.0°</td>
<td>-30.0°</td>
</tr>
<tr>
<td>Andrews' norms</td>
<td>-12.7°</td>
<td>-19.0°</td>
<td>-23.6°</td>
<td>-30.7°</td>
</tr>
</tbody>
</table>

The use of brackets has been consistently observed that lower posterior segments benefit from buccal uprighting of the lower posterior segment. It has been consistently observed that lower second molars with -35° of torque consistently “roll in” lingually. Therefore, the authors have chosen to reduce the lingual crown torque, by 5° in the lower cusps and bicusps, by 10° in the lower first molars, and by 25° in the lower second molars. Better results have been consistently observed that lower posterior segments benefit from buccal uprighting of the lower posterior segment. It has been consistently observed that lower second molars with -35° of torque consistently “roll in” lingually. Therefore, the authors have chosen to reduce the lingual crown torque, by 5° in the lower cusps and bicusps, by 10° in the lower first molars, and by 25° in the lower second molars.

In Figure 16 the MBT™ Versatile+ Appliance provides increased palatal root torque for the upper incisors (a, b, and increased labial root torque for the lower incisors (c), the most common requirements in orthodontic cases.
In-out Modifications of the MBT Versatile+ Appliance

It has been observed by the authors that the in-out measurements (including molar rotation) for the original Straight-Wire Appliance™ have, for the most part, proven to be quite satisfactory. With the exception of severe rotations at the initiation of treatment (best handled by space opening in combination with facial and lingual rotation elastics), minimal modifications in archwires need to be made until the finishing stage of treatment. At that time some teeth may need to be over-rotated for stability (using rotation wedges) and first molars may need archwire offsets to complete their rotation.

One important in-out feature that has been added to the MBT Versatile+ appliance is because upper second bicuspids are frequently smaller in size than upper first bicuspids. For this reason, an upper second bicuspid bracket has been provided with an additional 0.5mm of in-out compensation. This will allow for better alignment of central fossae in the upper arch and will also provide for relatively increased mesio-buccal rotation of the upper first molar. When upper second bicuspids are similar in size to the upper first bicuspids, an upper first bicuspid bracket can be used on the upper second bicuspids.

**Fig. 21** An upper second bicuspid bracket with an additional 0.5mm of in-out compensation is provided for the common situation in which upper second bicuspids are smaller than upper first bicuspids.

**Fig. 22** Patient with smaller 2nd bicuspids

MBT Appliance Versatility

- Inversion of upper lateral incisor brackets (Fig. 23, 24, 25). This is beneficial in cases with palatally displaced laterals requiring labial root torque for proper stability.

**Fig. 23** Normal Bracket -7° Torque

- Inversion of cuspid brackets with prominent cuspid roots. (Figure 26, 27). This adjustment allows for movement of the cuspid roots away from the cortical plate and into the center of the alveolar process.

**Fig. 24** Inverted Bracket +7° Torque

- 0° cuspid brackets with hook for extraction cases. (Figure 28). Many orthodontists prefer to have a hook on their cuspid bracket, and the zero degree torque value also allows the cuspid to move away from the cortical plate for easier retraction.

**Fig. 25** Optional Bracket 0° Torque With Hook

- Inversion of upper cuspid brackets when cuspsids are in the lateral position. (Figure 29, 30, 31). This adjustment allows the cuspid root to move palatally and assume a position and appearance that more closely resembles the lateral incisor.

**Fig. 26** Normal Bracket -7° Torque

- Same tip and torque in upper bicuspid brackets. Thus, in most situations, one bracket is used for all four upper bicuspids. This simplifies inventory and provides for less confusion during placement.

**Fig. 27** Inverted Bracket +7° Torque

- Additional 0.5mm of in-out in upper second bicuspids. (Figure 32). Approximately 30% of upper second bicuspids are smaller than upper first bicuspids. This bracket is most beneficial in this situation. If all four bicuspids are the same size, then first bicuspid brackets can be placed on both first and second bicuspids.

**Fig. 28** Optional Bracket 0° Torque With Hook

- Same tip and torque in upper bicuspid brackets. This is vastly simplified by the pre-labeled individual blister packs of the APC™ Adhesive Coated brackets used in the operatory.

- Lower second molar bands and brackets on lower first molars. When the buccal cusps of upper first molars impinge on the bracket of the lower first molar, the use of the lower second molar band with a much lower occlusal profile bracket often eliminates this problem.

- Lower second molar brackets on upper first and second molars when finishing in a Class II molar relationship. (Figure 34, 35). The lower second molar bracket has zero rotation and 10° of torque which places the Class II upper first molar in a correct relationship with the lower first molar.

- Inventory identification. This is vastly simplified by the pre-labeled individual blister packs of the APC™ Adhesive Coated brackets used in the operatory.

Continued on page 13
November 8-13, 1997  Jaguar Reef Lodge, Belize
February 12-16, 1998  Hacienda del Sol Resort, Arizona
February 14-21, 1998  Posada del Sol Resort, Honduras
March 22-26, 1998  Gunflint Lodge, Minnesota
April 4-8, 1998  Lone Mountain Ranch, Montana
May 19-26, 1998  Grand Canyon, Arizona
June 6-13, 1998  Yacumama Lodge, Amazon, Peru
June 22-28, 1998  Kenai Safari, Alaska
July 3-8, 1998  King Mountain Ranch, Colorado
July 27-31, 1998  Wollaston Lake Lodge, Saskatchewan
August 20-25, 1998  Forbes Trinchera Ranch, Colorado
September 17-23, 1998  Salmon River, Idaho
October 7-16, 1998  Galapagos Cruise, Ecuador

CONTINUING EDUCATION

DATE    PRESENTER   LOCATION               SPONSOR, SUBJECT

NOV. 7-8, 1997  Dr. Terry Dischinger  Newport Beach, CA  "Fixed Edgewise Herbst Appliance" Seminar
NOV. 13-17, 1997  Dr. Richard M. Laughlin  San Diego, CA  In-Office Seminar
DEC. 4-7, 1997  Dr. Terry Sellke  Amelia Island, FL  Summit in the Sun
JAN. 16-17, 1998  Dr. Anoop Sandhi  Orlando, FL  "Fixed Edgewise Herbst Appliance" Seminar
JAN. 30, 1998  Dr. Richard M. Laughlin  Denver, CO  "New Concepts in Treatment Mechanics and the Pre-adjusted Appliance"
JAN. 30-31, 1998  Dr. Anoop Sandhi  Omaha, NE  "Current Concepts in the Orthodontic Management of Temporomandibular Disorders"
JAN. 31 - FEB. 1, 1998  Dr. Richard M. Laughlin  Denver, CO  "Inter-Arch Treatment Mechanics"
FEB. 4-7, 1998  Dr. Terry Dischinger  Lake Oswego, OR  "Fixed Edgewise Herbst Appliance" Hands-on program
FEB. 12-16, 1998  Dr. Richard M. Laughlin  San Diego, CA  In-Office Seminar
FEB. 13, 1998  Dr. Daniel German  Alaska  Alaska State Society meeting
FEB. 19-21, 1998  Dr. Stephen Tracey  Red Lodge, MT  Montana Orthodontic Society
FEB. 19-23, 1998  Dr. Richard M. Laughlin  San Diego, CA  In-Office Seminar
FEB. 22-24, 1998  Dr. Terry Sellke  Loma Linda  "Zero Base - The West Side Story"
MAR. 26-29, 1998  Dr. Richard M. Laughlin  Las Vegas, NV  Summit in Las Vegas
MAR. 27, 1998  Dr. Terry Dischinger  Lake Oswego, OR  "Fixed Edgewise Herbst Appliance" Hands-on program
MAR. 27, 1998  Dr. Steve Hanks  Chicago, IL  "New Concepts in Treatment Mechanics and the Pre-adjusted Appliance"
APR. 17-18, 1998  Dr. Terry Dischinger  Lake Oswego, OR  "Fixed Edgewise Herbst Appliance" Hands-on program
APR. 18, 1998  Dr. Richard M. Laughlin  Chicago, IL  "New Concepts in Treatment Mechanics and the Pre-adjusted Appliance"
JUN. 26, 1998  Dr. Anoop Sandhi  San Diego, CA  San Diego State Society Meeting
JUN. 26-27, 1998  Dr. Terry Dischinger  Lake Oswego, OR  "Fixed Edgewise Herbst Appliance" Hands-on program
SEP. 25, 1998  Dr. Terry Dischinger  Washington, DC  "Fixed Edgewise Herbst Appliance" Seminar
OCT. 16-17, 1998  Dr. Terry Dischinger  Lake Oswego, OR  "Fixed Edgewise Herbst Appliance" Hands-on program
OCT. 23, 1998  Dr. Richard M. Laughlin  Boston, MA  "New Concepts in Treatment Mechanics and the Pre-adjusted Appliance"
OCT. 24-25, 1998  Dr. Richard M. Laughlin  Boston, MA  "Inter-Arch Treatment Mechanics"
OCT. 29 - NOV. 2, 1998  Dr. Richard M. Laughlin  San Diego, CA  In-Office Seminar
NOV. 5-9, 1998  Dr. Richard M. Laughlin  San Diego, CA  In-Office Seminar

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—GOETHE

Dr. Thomas Creekmore Receives 1997 Martin E. Dewey Memorial Award

The Martin E. Dewey Memorial Award was established by the Southwestern Society of Orthodontics in 1953. This award immortalizes Dr. Martin Dewey, an honorary member of this society, founder of the Kansas City School of Orthodontics, first editor of the American Journal of Orthodontics in 1911, President of the AAO, one of the first seven men elected to serve on the American Board of Orthodontics in 1922, and president of the ADA in 1932.

This award provides recognition to Southwestern Society of Orthodontics members for their contributions to the field of orthodontics, especially in the areas of education, research or public relations. 3M Unitek is pleased to offer congratulations to the 1997 recipient of the Martin Dewey Award, Dr. Thomas D. Creekmore.
In-out Modifications of the MBT Versatile+ Appliance

It has been observed by the authors that the in-out measurements (including molar rotation) for the original Straight-Wire Appliance have, for the most part, proven to be quite satisfactory. With the exception of severe rotations at the initiation of treatment (best handled by space opening in combination with facial and lingual rotation elastics) minimal modifications in archwires need to be made until the finishing stage of treatment. At that time some teeth may need to be over-rotated for stability (using rotation wedges) and first molars may need archwire offsets to complete their rotation.

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• Figure 20 A patient in need of posterior buccal crown torque.

Fig. 20

• Figure 21 An upper second bicuspid bracket with an additional 0.5mm of in-out compensation is provided for the common situation where upper second bicuspids are smaller than upper first bicuspids.

Fig. 21

Fig. 22

• Figure 22 Patient with smaller 2nd bicuspid.

Fig. 22

Fig. 23

• Inversion of upper buccal incisor brackets (Fig. 23, 24, 25). This is beneficial in cases with palatally displaced laterals requiring labial root torque for proper stability.

Fig. 23

Fig. 24

• Same tip and torque in lower incisor brackets. With the same lower incisor brackets, inventory is simplified and the possibility of confusion during bracket placement is minimized.

Fig. 24

Fig. 25

• Inversion of buccal incisor brackets when cusps are in the lateral position. (Fig. 29, 30, 31). This adjustment allows the cuspid root to move palatally and assume a position and appearance that more closely resembles the lateral incisor.

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• Same tip and torque in upper bicuspid brackets. Thus, in most situations, one bracket is used for all four upper bicuspids. This simplifies inventory and provides for less confusion during placement.

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Fig. 28

Fig. 29

• Lower second molar bands and brackets on lower first molars. When the buccal cusps of upper first molars impinge on the bracket of the lower first molar, the use of the lower second molar band with a much lower occlusal profile bracket often eliminates this problem.

Fig. 29

Fig. 30

• Lower second molar brackets on upper first and second molars when finishing in a Class II molar relationship. (Figure 34, 35). The lower second molar bracket has zero rotation and 10° of torque which places the Class II upper first molar in a correct relationship with the lower first molar.

Fig. 30

Fig. 31

• Lower second molar bands and brackets on lower first molars. When the buccal cusps of upper first molars impinge on the bracket of the lower first molar, the use of the lower second molar band with a much lower occlusal profile bracket often eliminates this problem.

Fig. 31

Fig. 32

• Inventory identification. This is vastly simplified by the pre-labeled individual blister packs of the APC™ Adhesive Coated brackets used in the operatory.

Fig. 32

Fig. 33

Fig. 34

Fig. 33

Fig. 35

Continued on page 13
3. Bracket Placement

Prior to the development of the pre-adjusted appliance, edgewise brackets were placed using gauges which set the bracket a specific number of millimeters from the incisal or occlusal tooth surface. When the pre-adjusted appliance was developed, the center of the clinical crown became the vertical reference for bracket placement, and most orthodontists discontinued the use of gauges. The brackets were therefore placed by visually selecting the center of the clinical crown. Unfortunately, this method resulted in significant errors relative to vertical placement. For example:

- Gingival variations, such as partially erupted teeth, labially and lingually (palatally) displaced roots, and gingival inflammation led to placement errors.
- Large teeth (upper central incisors) and small teeth (upper lateral incisors) within the same patient led to obvious errors when brackets were placed in the center of the clinical crown.
- Incisal or occlusal fractures and wear, as well as teeth with extremely tapered and pointed cusps, led to bracket placement errors. (Figure 36)

In the past, the best results were achieved by the orthodontists who were the best wire benders. In the future, the best results will come from those orthodontists who are the best bracket positioners.

“...MBT...”

The use of a bracket placement chart (developed in 1994), as well as pre-adjusted Dougherty gauges, Figures 37 and 38, dramatically reduces bracket placement errors in the vertical dimension. Figures 39 through 44 show placement technique. We have experienced approximately a 50-60% reduction in the need to reposition brackets during treatment using this very simple but effective system.

In Figure 16 the MBT™ Versatile+ Appliance provides increased palatal root torque for the upper incisors (a, b) and increased labial root torque for the lower incisors (c), the most common requirements in orthodontic cases.

Because of these factors there is generally a need for greater palatal root torque of the upper incisors and labial root torque for more uprighting of the lower incisors (Figure 15). For all these reasons, the authors recommend +17° of torque for the upper central incisors, +10° of torque for the upper lateral incisors, and -6° of torque for the lower incisors.

In Figure 17 the MBT™ Versatile+ Appliance™ 6 and the Roth Appliance™ provide increased palatal and labial root torque for more uprighting of the lower incisors (Figure 15).

There are three reasons for reducing the amount of lingual crown torque in the lower cuspid, bicuspid and molar areas: 1) Since lower cuspid and bicuspid often show gingival recession, they benefit from the roots being moved closer to the center of the alveolar process; 2) Many orthodontic cases demonstrate narrowing in the maxillary arch with lower posterior segments that are compensated toward the lingual. These

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from the buccal groove (Fig. 14c) and 5° of tip in the upper molars, as measured and bracket slots placed parallel to the occlusal plane, it provides for crown tip in the upper molars. When using these 5° brackets, it is frequently prevented posterior teeth from the distal of the band. If the 5° bracket is used, the band must be seated more gingivally at the mesial aspect to position bracket wings parallel to buccal groove. (Fig 14a).

Narrow Contoured Molar Bands have been extremely easy to use and are a welcome addition to the MBT system. In summary, then, all of the upper posterior brackets are provided with 0° of crown tip for the reasons described above.

The authors observed that torque is rather poorly controlled with the pre-adjusted appliance system. This is due to the fact that the torque movement is a difficult one since less than 1mm of contact between the bracket and the archwire must bring about this movement. In general, here lies the greatest challenge to bracket design in the pre-adjusted appliance. In the majority of orthodontic cases, because of this lack of torque control, torque tends to be lost in the upper incisors during overjet reduction and space closure. The lower incisors frequently tend to procline forward during Curve of Spee leveling and when eliminating lower incisor crowding. This incisor torque factor, along with the tip and torque size factors, frequently prevents posterior teeth from fitting into a Class I relationship.

Upper Posterior Tip

For the MBT Versatile+ Appliance, 0° of tip, as opposed to 2° of tip, was selected for all upper bicuspid brackets to place the crowns in a slightly more upright position, (in a Class I direction). It also provides for slightly reduced anchorage needs for the upper arch.

The buccal groove is the reference for crown tip in the upper molars. This buccal groove shows a 5° angulation to a line drawn perpendicular to the occlusal plane. There are two methods of achieving 5° of effective tip in the upper first and second molars.

If a 5° bracket is selected, the band being seated gingivally at the mesial aspect to position bracket wings parallel to buccal groove. (Fig 14a). This makes band positioning more difficult. When using these 5° brackets, it is frequently necessary to trim band material from the distal of the band. If the 5° bracket is used and the band is placed parallel to the occlusal plane, it provides an excessive 10° of actual tip to the upper first and second molars (Fig. 14b).

Alternatively, the authors prefer to use a 0° crown tip bracket with the band and bracket slots placed parallel to the occlusal plane. This introduces the correct 5° of tip in the upper molars, as measured from the buccal groove (Fig. 14c) and is easier to seat. The new Unitek

Table 3 shows posterior tip measurements for the lower bicuspid and lower molars: Andrews’ non-orthodontic normal study,6 two Japanese studies2, 3, the MBT Versatile+ Appliance, the Original Straight-Wire Appliance6 and the Roth Appliance6.

Table 2: Upper Posterior Tip

Table 2. Upper Posterior Tip  

Effective Tip

Table 3: Lower Posterior Tip

Table 3. Lower Posterior Tip  

Effective Tip

Table 4 shows anterior torque values: Andrews’ non-orthodontic normal study6, two Japanese studies2, 3, the MBT Versatile+ Appliance, the Original Straight-Wire Appliance6 and the Roth Appliance6.

Table 4. Anterior Torque

The arch form has varied from a straight line to a more tapered shape in patients with narrow inter-cuspid width and wider curvature in patients with wider inter-cuspid width. The literature reveals that inter-cuspid width is the most critical aspect of arch form selection.

In past, posterior arch form shape has varied from a straight line (Bonwill-Hawley) to a significant curvature (Brader). Figure 45 arc form super-impositions show a slight curvature in the posterior arch form, which seems to be a practical approach. The posterior arch form is slightly widened in the bicuspid region to provide better function during protrusive movement, (as described by Roth) and to decrease the tendency for arches to collapse in the bicuspid region in extraction cases.

Figure 45’s inter-molar width is essentially the same. That is because it is impractical to maintain a large inventory of arch forms with many
The use of the .016” Nitinol Heat-Activated wire to replace multi-strand and the .024” round wire has been most satisfactory. This initial arch wire can be placed with ease in most cases, and can be retied one or two times at 4 to 6 week intervals.

Table 1 shows anterior tip measurements: Andrews’ non-orthodontic normal study1, two Japanese studies 2, 3, the MBT Versatile+ Appliance, the Original Straight-Wire Appliance 4, 5, and the Roth Appliance 6.

The anterior tip measurements for the original Straight-Wire Appliance are all greater than those found in Andrews’ research. This was presumably due to the Andrews’ series referred to as the “wagon wheel” effect* that torque places on anterior crown tips. This is somewhat similar to the compensating anti-tip, anti-rotation and power arms built into the extraction brackets for the treatment of bicuspid extraction cases.

*As palatal root torque is added to the anterior segment, mesial crown tip is reduced.

It has been observed by the authors that with light continuous force mechanics, tip is well controlled by the pre-adjusted appliance. Using “lace-backs” and “bendbacks” during leveling and aligning, and elastic module “die-backs” during space closure, very little adverse tipping occurs during these stages of treatment. By the finishing stage of treatment, completely levelled upper and lower rectangular wires are normally in place, indicating that full expression of both anterior and posterior crown tip has occurred. Thus, additional tip is not seen to be necessary in the anterior segments.

Also, additional anterior tip creates a significant drain on molar anchorage. Figure 10, 11. If the original research values for tip are used, a total of 10° less distal root tip in the upper anterior segment and 12° less distal root tip in the lower anterior segment is needed (compared against the Original Straight-Wire Appliance). Figures 10 and 11 show the difference in root positions with MBT Versatile+ Appliance and two SWA.

Figure 12: The MBT Appliance provides anterior tip measurements that correspond to Andrews’ norms. This reduced tip provides a significant reduction in anchorage needs. Also, reducing the tip on the cusps avoids the frequently observed problem of cusp and bicusp cuspids that finish in close proximity.
Finishing

Finishing involves three main processes:
- The correction of mistakes made earlier in treatment (bracket positioning, torque control, anchorage control etc.)
- Over-correction as needed (periodontal, alveolar-sural, muscular, and growth)
- Setting of cases in light wires for approximately six weeks (minimum) prior to debanding

Retention

Retention is accomplished using a combination of bonded retainers for the lower anterior segment, wrap around retainers for the upper teeth, aesthetic brackets for an aesthetic appearance during treatment.

2. MBT Appliance
Bracket System

Victory Series™ Brackets - Figures 1, 2, 3 show a candidate for this small steel bracket, as evidenced by the patient's short clinical crowns.

Clarity™ Brackets - Figures 4, 5, 6 show Clarity metal-reinforced ceramic brackets on her upper teeth, aesthetic brackets for an individual patient is what is really most important. Failure to do this will result in relapse. In and out dimension covered some problems, but not all of them. What I would like to see is a return to a customized arch form for each patient without the need to overstock office inventory or waste time in unneeded wire bending. This seems to be the best method of efficientlyachievingsafe andestheticend results.

REFERENCES

Dr. Richard McLaughlin completed his orthodontic training at the University of Southern California in 1976. Since then he has been in the full time practice of orthodontics in San Diego, California. While developing his own practice, he was an associate of Dr. Lawrence F. Andrews for seven years. Dr. McLaughlin has lectured extensively on the pre-adjusted appliance system, and with Dr. McLaughlin he has published numerous articles and has co-authored a long awaited textbook. He is a member of many orthodontic organizations, including the American Association of Orthodontists, the American College of Orthodontists, the Angle Society of Orthodontists, the American Orthodontic Society, the Sao Paulo, Brazil, Dr. Hugo Trevisi. He is a member of the Pacific Coast Society of Orthodontists, the American Association of Orthodontists, a Diplomate of the American Board of Orthodontics and a full member of the American Board of Orthodontics. In addition, Dr. McLaughlin is an associate clinical professor at the University of Southern California, Department of Orthodontics.

Dr. John Bennett - London, England

Dr. Bennett completed his orthodontic training at the Eastman Dental Institute in London, England in 1972. Since that time he has been in the full time practice of orthodontics in London, England. For the past 20 years he has worked exclusively with the pre-adjusted appliance system, and with Dr. McLaughlin has held a particular interest in evaluating and refining effective treatment mechanics utilizing light forces. These concepts have developed and have included the more recent contribution from Dr. Trevisi. Their well tried and effective treatment approach has seen widespread acceptance. Dr. Bennett has lectured internationally on the pre-adjusted appliance for a number of years. Together with Dr. McLaughlin he has published numerous articles and has co-authored two orthodontic textbooks, both of which have been well received. He is currently a part-time clinical instructor at the post-graduate orthodontic program at Bristol University in England.

Dr. Hugo Trevisi - Sao Paulo, Brazil

Dr. Hugo Trevisi received his dental degree in 1974 at Lins College of Dentistry in the state of Sao Paulo, Brazil. He received his orthodontic training from 1979 to 1983 at that same college. Since that time he has been involved in the full time practice of orthodontics in Presidente Prudente, Brazil. He is a Faculty Member at the University of Odontology and Dentistry in Presidente Prudente. He has lectured extensively in South America and Portugal and has developed his own orthodontic teaching facility in Presidente Prudente. Dr. Trevisi has 20 years of experience with the pre-adjusted appliance. He is a member of the Brazilian Society of Orthodontics and the Brazilian College of Orthodontists.

The MBT Philosophy of Orthodontic Treatment in Practice

1. Treatment Mechanics

Emphasis on dento-alveolar change

The major effect of orthodontic treatment is on the dento-alveolar structures. Thus the term “growth modification” in growing patients consists primarily in the modification of the growth and development of the dento-alveolar processes. While other “orthopedic” changes may be occurring in some patients, the majority of change is dento-alveolar, and, therefore, emphasis is placed on the management of these structures.

Use of Light, Continuous Forces

Intermittent forces have proven to be relatively ineffective in bringing about dental tooth movement; on the other hand, continuous forces are most effective in moving dental structures. Heavy forces have been shown to have a detrimental effect on the root structure while lighter forces have been shown to maximize biologic response and efficacy in tooth movement. Therefore, treatment planning is directed at providing light continuous forces on the teeth that need to be moved at any given time during orthodontic treatment.

Anchorage Control

A combination of extra-oral (headgear, and “J” hooks) and intra-oral (palatal bars, lingual arches, Class II elastics, Class III elastics, Nance arches, Utility arches, etc.) methods of anchorage control are utilized in the MBT system.

Leveling and Aligning

The leveling and aligning stage of treatment consists of the following techniques:

- Use of Nitinol Heat-Activated nickel titanium wires during the aligning process
- The use of canine lace backs for cuspid control and retraction
- The use of bend backs to control forward movement of incisors
- The use of open coil springs to create space for blocked out teeth
- Early establishment and maintenance of arch form, followed by bringing malposed teeth into the primary arch form without arch form distortion

Overjet (Class II-Class III) Correction

Class II and Class III correction is accomplished by using a combination of headgear, Class II and Class III elastics, and functional appliances. These appliances are used in combinations that bring about the best opportunity for continuous forces on the dento-alveolar processes.

A Clinical Review of the MBT Orthodontic Treatment Program

By Dr. Richard McLaughlin, Dr. John Bennett and Dr. Hugo Trevisi

MBT Treatment Philosophy

The MBT philosophy of orthodontic treatment has been developed over a twenty year period of time and has involved the combined efforts of its three principle clinicians, along with the help of numerous other clinician colleagues. Their philosophy places emphasis on four critical areas of orthodontic treatment: 1. Treatment mechanics, 2. The pre-adjusted appliance, 3. Bracket placement technique, and 4. Arch form and archwire sequencing.

The MBT philosophy is supported not only by a custom designed appliance, but also by worldwide continuing educational opportunities as well as a long awaited textbook.

MBT Philosophy

Anchorage Control

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- The use of open coil springs to create space for blocked out teeth
- Early establishment and maintenance of arch form, followed by bringing malposed teeth into the primary arch form without arch form distortion

Overbite Control

Overbite control is best accomplished by using the following principles:

- Differentially controlling the eruption/extrusion (intrusive and extrusive forces) of the anterior and posterior segments
- Including second molars early in treatment for the opening of most deep bite cases
- Being aware that in most cases leveling and bite opening are not complete until rectangular wires have been in for one or two months
- Avoiding leveling of the posterior portion of the Curve of Spee in open bite cases

Space Closure

Space closure control is best accomplished by using the following principles:

- A .019 x .025” rectangular wire in the .022 bracket slot is preferred for effective sliding mechanics without major archwire deflection
- Sliding mechanics is accomplished with elastic module tie backs
- Incisor torque control is accomplished through bracket design and archwire bending

Overjet (Class II-Class III) Correction

Class II and Class III correction is accomplished by using a combination of headgear, Class II and Class III elastics, and functional appliances. These appliances are used in combinations that bring about the best opportunity for continuous forces on the dento-alveolar processes.
3M Unitek Now On The Web
A further demonstration of 3M Unitek's commitment to the future can be found on our brand new web page. We invite you to stop by and browse.

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3M Dental Receives '97 Baldrige Award
3M Unitek congratulates 3M Dental for receiving the 1997 Malcolm Baldrige Award. 3M Dental is the first division within 3M and the second company in health care to receive this coveted award, which certifies a company's ongoing commitment to business excellence.

Welcome Pat Ford
We are also very fortunate to be able to introduce our new President and General Manager, Mr. Patrick B. Ford. Pat is a seasoned manager with over 30 years experience with 3M. Pat has a strong background in healthcare, sales operations, international market development and subsidiary management. Both his track record and background make him well qualified to guide 3M Unitek's continued growth and market leadership worldwide. He's extremely pleased to join us at this exciting time, as 3M Unitek launches innovative new products such as Clarity™ Metal-Reinforced Ceramic Brackets and the MBT™ Appliance System. 3M Unitek is also an exclusive distributor for the AJ O-Dojo, as well as the Angle Orthodontist on CD-ROM. These, and other orthodontic products, will help usher us in our upcoming 50th anniversary celebration in 1998. Pat has firmly endorsed and is committed to 3M Unitek's credo of providing superior service to our customers. Please join us in welcoming Pat Ford as the new leader of 3M Unitek, producer of orthodontic products and services to make your life easier.

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Good Luck Rich Iverson
3M Unitek is sad to say goodbye to our President and General Manager, Mr. Rich Iverson, but we are happy for him as he assumes his new responsibilities in his appointment to head up the Medical Resource Technology Division at 3M. In his 8 years with us, Rich has helped to smooth the transition as we evolved from Unitek into 3M Unitek and became the unquestionable leader in orthodontics as well as the world's largest orthodontic manufacturer. This growth has been due to our strategic goal of developing and maintaining the Best Customer Relationships in the Orthodontic industry. Good luck Rich.

MBT Text Support
Two text books, "Orthodontic Treatment Mechanics and the Preadjusted Appliance" & "Orthodontic Management of the Dentition with the Preadjusted Appliance," both co-authored by Dr. John Bennett and Dr. Richard McLaughlin, support the MBT philosophy, but are not Edition 1 and Edition 2 textbooks. Rather, each are textbooks on entirely different subjects.

"Orthodontic Treatment Mechanics and the Preadjusted Appliance," on the other hand, published in 1993, contains the following information:

1. Basic orthodontic mechanics on Class I extraction and non-extraction types of cases.
2. General information on bracket positioning and basic information on the pre-adjusted orthodontic appliance.
3. Information on the transition from Standard Edgewise to the pre-adjusted appliance.
4. Information on anchorage control and leveling and alignment of the orthodontic case.
5. Information on orthodontic mechanics of space closure in extraction cases.
6. A limited amount of information on the very large subject of overjet reduction.
7. Information on the mechanics of space closure in extraction cases.
8. Some general information on the subject of finishing and detailing of orthodontic cases.

Contents Include:
1. General information on research involved in bracket placement techniques as well as information on the use of bracket placement charts.
2. Detaled information on research involved in bracket placement techniques as well as information on the use of the bracket placement chart.
3. Individual information on each tooth in the dentition concerning general mechanical considerations and common clinical concerns.
4. Incisors - Information on various aspects of incisors such as trauma, tooth size discrepancy, congenital absence and malformation and shape of these teeth.
5. Cuspids - Information on the management of clinical situations such as cuspid impaction.
6. First bicuspids - The problems of congenitally missing second bicuspids, retained deciduous second molars and second bicuspid extraction are discussed in this chapter.
7. Second bicuspids - The problems of congenitally missing second bicuspids, retained deciduous second molars and second bicuspid extraction are discussed in this chapter.
8. First molars - General considerations on first molars, including discussion of possible indications for extraction, are included in this chapter.
9. Second molars - The vertical and horizontal anchorage aspects of second molars are discussed in this chapter as well as the very controversial subject of second molar extraction.
10. Third molars - Research on the development, eruption and extraction timing of third molars is discussed in this chapter.