

# PITTS' PROTOCOL

Issue 1

## Introducing Dr. Tom Pitts

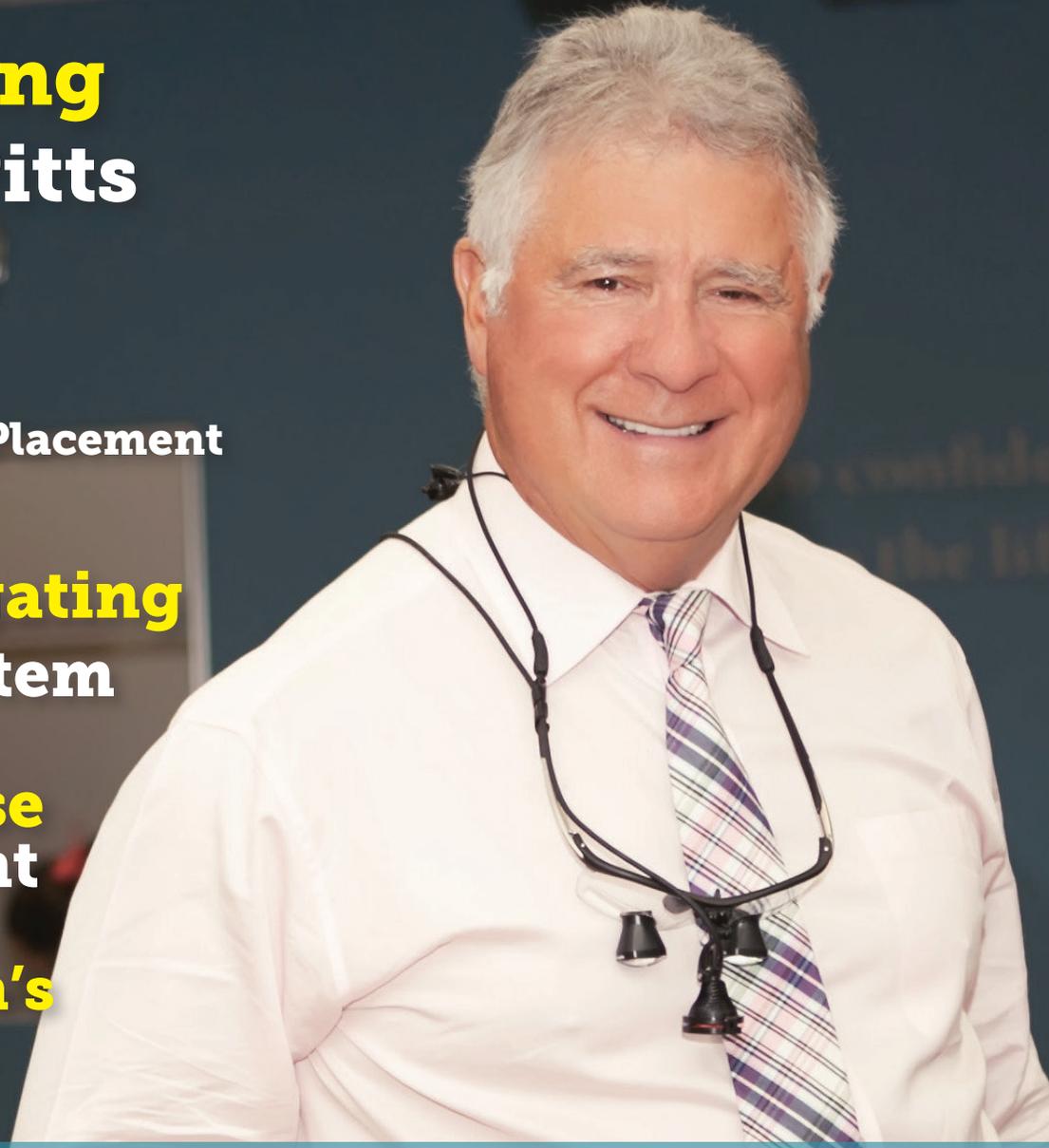


**SAP**  
Bracket Placement

**H4™ Self-Ligating  
Bracket System**

**Dr. Pitts Case  
Management**

**Dr. Bernstein's  
Big Switch**



education | community | collaboration



Dear Doctor and Staff:

I'm very pleased to present you with the 1st issue of Pitts' Protocol. Each and every year we do our best to grow and improve as a company and I think without exception we have done so again this year. Our dedication to working hand-in-hand with the orthodontic community has taken a tremendous leap forward this year as well. By introducing The Protocol, we plan to keep you up to date with the latest orthodontic technology, products, and techniques. Dr. Thomas Pitts will be the Clinical Editorial Director and oversee all of the clinical content of the magazine. In this issue alone, he has provided some amazing articles on Smile Arc Protection and Case Management. He and his colleagues will be providing new and exciting content every quarter as long as the magazine is published.

Ortho Classic have been designing and manufacturing orthodontic products in America for over 24 years and advancements in technology have given us the opportunity to produce some of the highest quality, and consistent brackets possible. We are dedicated to offer our customers, large or small, the highest quality services while continuing to develop the most technological and innovative products possible. In an era of increasing globalization we will continue to adhere to our "customer-first" philosophy, working tirelessly to provide superior products and services that consistently surpass market expectations and excel on the world stage.

Please join us on our journey to the future, and accept our appreciation for your kindness and on-going support. Once again, we at Ortho Classic would like to thank you for your continued loyalty and business.

Rolf Hagelanz  
*Ortho Classic President*



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# PITTS' PROTOCOL

## TABLE OF CONTENTS

**6**

### **Dr. Tom Pitts**

Meet Dr. Pitts and read why he chose Ortho Classic over other companies

**8**

### **Dr. Tom Pitts Case Management**

The 14 Keys to Pitts Case Management and Active Early Concepts

**16**

### **H4™ Self-Ligating**

Feature and benefits of the H4™ Self-Ligating Bracket System

**21**

### **Pitts' Bonding Protocol**

Dr. Pitts' bonding recommendation

**22**

### **SAP™**

Learn more about Smile Arc Protection (SAP)

**28**

### **The Big Switch**

Dr. Rael Bernstein's switch to H4™ Self-Ligating System

**30**

### **Events**

List of upcoming Ortho Classic events

# CONTRIBUTORS



**Dr. Thomas Pitts D.D.S., M.Sc.D.**

Dr. Pitts is a world renowned lecturer and clinician. He is highly recognized for his continued teaching of orthodontic finishing and clinical excellence. Dr. Pitts is an associate clinical professor at the University of the Pacific and founder of the well-respected Pitts Progressive Study Club.

Dr. Pitts has been published in multiple journals and clinical publications. He has been actively teaching the orthodontic community in a variety of setting both nationally and internationally since 1986.



**Dr. Duncan Brown B.Sc., D.D.S., D. Ortho**

Dr. Duncan Brown is a highly regarded international speaker and educator in passive ligation bracket systems. Dr. Brown teaches regularly at the University of Alberta and University of Manitoba and is also a Kodak/Carestream Dental speaker and consultant.

Dr. Brown has made large contributions to the orthodontic community from creating effective hygiene programs for patients, to the G&H Pre-Torqued Arch-wire series and much more!



**Dr. Tomas Castellanos Arteaga D.D.S., M.Sc.D.**

Dr. Tomas Castellanos is an international speaker and certified educator. Dr. Castellanos has been the coordinator of research with important works, which have developed new orthodontic and surgical techniques, that speed up the treatment time and provide striking functional and aesthetic results. He has his professional practice as an orthodontist in Colombia.

His progressive treatment planning and focus on facial aesthetics has created a highly successful name for himself early in his career.



**Dr. Rael Bernstein D.D.S., M.S.**

Dr. Bernstein is accredited with having one of the nation's fastest growing start-up private practices in a highly competitive part of California over the last decade. He is known for relentlessly implementing many ideas and strategies learned from within and without the profession. His team is dedicated to clinical excellence, customer service, business development and community outreach. He believes that our profession is changing at an alarming rate and has been working hard to stay ahead of the curve.

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## Dr. Thomas Pitts *D.D.S., M.Sc.D.*

### What made you decide to work with Ortho Classic over other companies?

When the time came for me to search for a new project, I looked for a company that was into the highest quality manufacturing, and I “shopped for a slot” that had a capacity to increase efficiency in quality treatment. Ortho Classic is the best company I have found, with respect to slot tolerances, as they use torques that make sense for the upper and lower 6 anterior teeth, and they have slot dimensions that activate the appliance earlier, for both rotation and torsional control. The corporate culture at Ortho Classic is most refreshing to me. They are located in McMinnville, Oregon, not too far from Portland. I am currently consulting and working with this dynamic company on product development, testing new concepts, and teaching. The owners’ interest is providing products to assist the orthodontist in delivering quality patient care.

Due to the quality manufacturing, tightened tolerances and slot dimensions, I now have less bends in my wires for detailing and finishing. They are really setting themselves apart from other manufacturing and supply companies, and doing it with lower pricing. I love passive self-ligation for many reasons, but they also manufacture precision twin brackets, wires, clear twin brackets, clear PSL brackets, elastics, power chains, etc. Ortho Classic is very innovative. They also have a simple clear low profile bracket that they call “C-Thru”. This bracket uses very small round wires, and can be used in place of aligners or in conjunction with aligners, which is very useful for re-alignment cases. There is so much enjoyment in working with a company that is so responsive, and doesn’t have to look at the stock price each morning to decide if they are going to enhance their products or not. As I stated previously, the corporate culture and atmosphere is refreshingly positive.



*"Due to the quality manufacturing, tightened tolerances and slot dimensions, I now have less bends in my wires for detailing and finishing. Ortho Classic is really setting itself apart from other manufacturing and supply companies, and doing it with lower pricing."*

*-Dr. Thomas Pitts*



# MEET THE ORTHODONTIST



## “The 14 Keys to Pitts Case Management”

*“We are what we repeatedly do, excellence, then, is not an act but a habit” - Aristotle*

### Introduction:

How many times in your career have you come back from a course having seen and heard some wonderful things that you wanted to implement into your clinical procedures, only to find out when you got home that putting them into practice was very difficult. Very shortly, you reverted to old habits, and all the “value” you thought possible was lost. Inspirational speaker and self-help author, Tony Robins is correct when he says, “I know lots of people who know what to do, but fewer that do what they know”.

Today’s orthodontic patients consistently demand more than “just straight teeth”. While “putting the plaster on the table” is now generally acknowledged as not being representative of the best orthodontics has to offer, the reality of everyday

practice confirms that esthetic decline is quite common with treatment<sup>1</sup>, and patients want treatment time to be as short as possible.

For years I have tried to simplify diagnostic processes and case management strategies allowing the Orthodontist to attain greater consistency in delivering optimal esthetic and functional occlusal results. This requires that the Orthodontist expand his/her diagnostic and mechanical understandings beyond reliance on improved “straight wire” appliances to attain superior esthetic results. David Sarver has made great contributions by painting an accurate picture of today’s desired facial and smile esthetics and the impact on esthetics of orthodontic treatment mechanics. I also agree with his concept on placing the position of the upper incisor

as the prime diagnostic criteria in developing superior esthetics<sup>2</sup>.

Today I would like to develop the context for the pivotal role of case management in attaining superior esthetic and occlusal results, and suggest strategies for application of simple case management practices that provide consistent improvement in esthetic and functional outcomes during treatment.

### The Pivotal Role of Case Management:

Treatment planning is one of the milestones of every Orthodontist’s training. Large amounts of time and energy can be devoted to the evaluation of “static” records, like model analysis for crowding, cephalometric evaluation of potential growth direction, positions of the teeth



Figure 1

and skeletal bases, traditional “closed mouth” facial photographs for soft tissue positions, VTO’s for potential tooth movements, and mounted models for CO/CR discrepancies. Once a doctor has been in practice for a while, and comes to appreciate the dynamic aspects of patient care, the value of these “initial planning exercises” change, and value of sound case management practices comes into play (Figure 1).

The finest “artistic” orthodontic results are produced by the best case managers regardless of the appliances they use. This is because these clinicians clearly understand the technology they use on a daily basis, and apply clinical opportunities that are available to address specific patient clinical needs. In addition, these special orthodontists are not stymied by the “stability” ball and chain in their treatment protocols.

### “Active Early” Case Management Core Principles:

For years Orthodontists have desired to gain control of axial inclination earlier in the treatment cycle. However limitations imposed by the traditional application of “straight wire theory”, where torsion is created through incremental increases in wire dimension occur late (if at all) in the treatment cycle make it nearly impossible<sup>3</sup>. By using certain protocols, orthodontists are now able to remove that limitation.

Applying appropriate levels of technology to an “artistic” end result creates many positive opportunities. If I want to “activate” the appliance and treatment as early as possible, I can use the SAP<sup>4</sup> bracket position to adjust the vertical position of the incisors, invert groups of brackets to activate the appliance, select arch wire progressions that control axial inclination early in treatment, use arch forms that develop the posterior segments of the

arches sooner, implement “ELSE” (Early Light Short Elastics) to control forces, and appropriate disarticulation to encourage early “wanted” tooth movements. This is known as an “Active Early” approach to case management<sup>5</sup>.

Clinicians have been trying to explain the “stages of clinical management” for years, usually without broad success. In our case management approach<sup>5</sup> the treatment cycle is conceptualized as occurring in two stages based on clinical management opportunities available during the stage (Figure 2).

### First Stage:

Where either round or non-adjustable dimensional wires are used. The goal during the first “Active Early” stage of treatment is to achieve the majority of your occlusal and esthetic goals for the patient. Clinical management opportunities focus on adjustment in bracket position, adjustment of ELSE patterns, refinement of disarticulation, adjustment in tooth morphology with positive and negative coronoplasty, slenderizing, use of auxiliaries (TAD’s for example) to control anterior and posterior tooth movements and NMI (neuromuscular intervention) as appropriate. With our protocols, we now begin early arch width development,

leveling, torque control, AP and early vertical development. This stage lasts until the Pan/Repo appointment (PRACM). This is described by Dr. Jim Morrish of Bradenton Florida as Panorex Reposition, Adjust Case Management. In my experience, this commonly occurs around the 4th appointment, after some degree of torsion improvement and arch development in non-adjustable dimensional arch wires has been attained (Figure 4). At PRACM, adjustments in bracket position, bracket torque (upright/flipped), ELSE, disarticulation, need for tooth re-approximation, or a modification of mechanics (decision to extract, TAD placement, etc.), based on a definitive review of the case progress are made (Figure 5, 6).

Most traditional orthodontics is taught on the basis of “sequential mechanics”, where one mechanical goal is addressed after the preceding goal is attained (transverse development, level/align, overbite correction, occlusal correction). One of the reasons I enjoy using a PSL appliance like H4 self-ligating bracket from Ortho Classic, is that many of these clinical managements aspects can be approached “simultaneously”, resulting in significant gains in treatment efficiency. This “simultaneous mechanics” approach to addressing esthetic and functional treatment goals is a pivotal feature of “Active Early” (Figure 3). Significant occlusal gains in alignment, OB correction, and A/P correction, are combined with improvements in smile arc creation, transverse arch developments, and axial inclination improvement occurring quite early in the treatment cycle, usually by the 4th appointment.

Another hallmark of “Active Early” is the continuous assessment of progress that is occurring towards both esthetic and functional goals as treatment progresses. I encourage the broad adoption of an

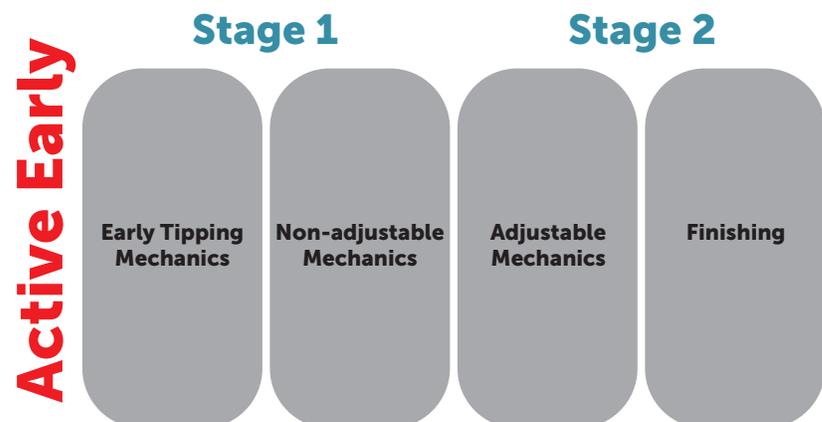


Figure 2

“every patient/every appointment imaging approach” as a discipline in improving continuous case progress assessment. The collateral marketing and patient education benefits of imaging are so great that even staff members who are initially concerned with the extra effort, are soon converted to raving fans! None of the clinicians I know that have adopted this discipline, have ever regretted the effort.

**Second Stage:**

After PRACM, where adjustable dimensional wires are used, the goal is the refinement of the esthetic and occlusal aspects leading to optimal results most appropriate for the patient. Clinical management opportunities focus on overcorrection, AW adjustment for occlusion and esthetic refinement, tooth size adjustments for either esthetics or anterior/cuspid guidance, optimization of the occlusion through occlusal adjustment (CO=CR), and refinement of mini-esthetics of hard and soft tissue.

**The Goal: Better Results Through Simple Concepts, Trainable Skills**

My goal in clinical teaching has been to simplify complex concepts into contemporary treatment protocols that can provide significant advantages in the treatment of most orthodontic cases. While some features of a patient’s clinical outcome cannot be determined by orthodontics, many are able to be directly influenced by the Orthodontist. In an “Active Early” approach, I encourage clinicians to focus on the clinical opportunities they can control. In my experience I have identified several clinical approaches that positively affect the quality of the end result: “The 14 Keys to Pitts Case Management”.

The next section will introduce some of these important concepts and clinical opportunities that Orthodontists can use to improve their clinical results. These will all be discussed more fully in subsequent “white papers”.

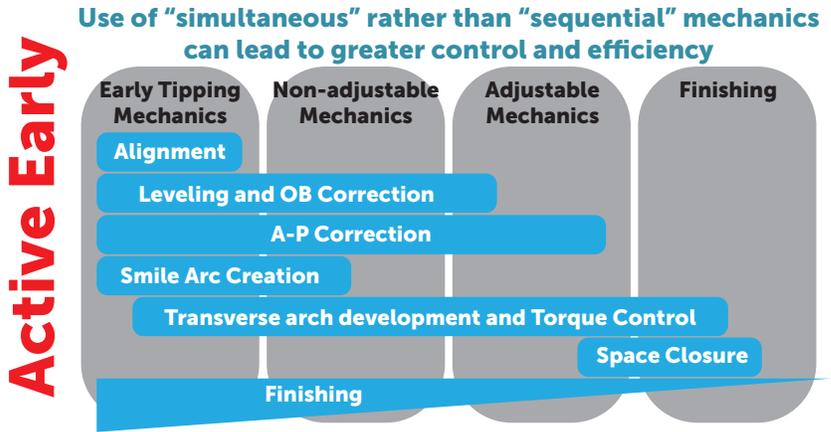


Figure 3

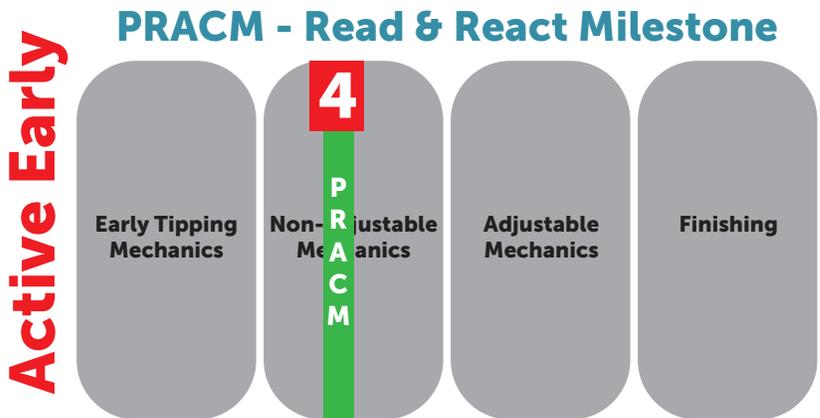


Figure 4

Incisor Display at Rest	2
Incisor Display on Smile	2
Transverse Smile Dimension	2
Resting Lip Support	3
Crowding	3
Smile Arc	2
Buccal Corridors	3
Gingival Display on Smile	2



Figure 5

4 Appointments

Incisor Display at Rest	2	2
Incisor Display on Smile	2	2
Transverse Smile Dimension	2	3
Resting Lip Support	3	3
Crowding	3	3
Smile Arc	2	3
Buccal Corridors	3	3
Gingival Display on Smile	2	2



Initial Smile Close Up



Progress Smile Close Up

Figure 6

### Stage 1: the first of the 14 Keys to Case Management

In a conventional "straight wire" approach to treatment, all early tooth movements involve tipping, and in most approaches very limited control is afforded to the Orthodontist. In contrast, in the "Active Early" approach a good deal of control is available through a number of clinical opportunities even when using non-adjustable wires. Most obvious among them are:

**1. Positive and Negative Coronoplasty:** Patients today want beautiful faces, beautiful smiles, and beautiful teeth; meaning teeth need to be "optimized" for shape and contour. Prior to bonding, esthetic re-contouring improves the ability to place brackets in the appropriate location to maximize the smile arc, optimize axial inclination, and control 1st and 2nd order changes during tipping or early torsion mechanics. Softening the cusp tips of the cuspids and first bicuspid, normalizing facial irregularities, and optimizing length/width ratios of the upper anterior teeth is critical to optimum bracket placement through either positive or negative coronoplasty. All surfaces that have been adjusted are smoothed with a white stone and black rubber tip using a high speed hand piece.

**2. "SAP Bracket Position" as a tool in gaining optimal esthetics:** Bracket position is individualized to meet patient esthetic need. In patients with "flat" occlusal planes or those that require increased enamel display, the progression of the wire plane, created by bracket position, must increase to develop the smile arc by extruding the upper incisors relative to the upper bicuspids (Figure 7, 8). In patients with normal occlusal planes a more modest progression in the wire plane is still advisable to protect the smile arc as the upper arch broadens with treatment. A modest progression is still advised in deep bite cases to avoid excessive reduction in smile arc with reduction in overbite. It is important to remember that large bracket progressions in the upper arch must be compensated for by over-leveling the lower arch to establish optimum overbite relationships. A number of articles on the SAP technique have been published in recent years<sup>6,7,8</sup> and SAP bracket positioning is now being employed regularly around the world.

**3. "Bracket and Torque selection", Why I love the H4 Passive Self-Ligation by Ortho Classic:** With practitioners attempting to treat more cases without extractions, control of proclination of the upper anterior teeth has become a greater challenge. Frequently the technical challenge is getting enough lingual crown torque without having to resort to complex wire bending to attain esthetic results. "Low torque" Rx's endorsed by some PSL bracket producers have not met these needs for me<sup>9</sup>. One of the reasons I prefer the H4 appliance is that the Rx is predictable when upright, and appropriate when flipped, providing greater lingual crown torque to the central when up-righting of the anteriors is required (Figure 9). When using "flipped" anterior brackets, we encourage the patient to be seen every 6-7 weeks to assess progress and palpate the upper anterior alveolus. Once ideal axial inclination is attained, the appliance can be "deactivated" simply by reducing the arch wire dimension or adjusting the 3rd order bending. Note that it is important to use Beta Titanium arch wires no larger than 19x25 when using "flipped" appliances.

**4. "ELSE" - Early, Light, Short, Elastics:** I have advocated use of early light elastics for the past 20 years, especially when using PSL mechanics. Sabrina Huang, a close friend of mine from Taiwan, suggested the acronym some years ago, and I continue to describe the technique in those terms. The use of ELSE (no more than 2.5 oz.) increases the efficiency of treatment dramatically by maximizing "wanted" tooth movements in all dimensions, and minimizing or mitigating "unwanted" tooth movements during the tipping or early torsional phases of treatment. Patient cooperation is critical, and reinforcing early progress through "every appointment" photography is very useful. John Campbell describes the use of ELSE to his patients as, "24 hour elastic wear is not part of your treatment, it is your treatment".

### 5. "Disarticulation" - bite turbos, or occlusal pads as a tool in increasing

**effectiveness of ELSE:** PSL mechanics are broadly appreciated as using minimal RTS (resistance to sliding), in conjunction with low forces. By encouraging "wanted" tooth movement and removing the forces of occlusion that perpetuate the malocclusion, disarticulation contributes to the effectiveness of early mechanics. Adjustment to the disarticulation is made when required. This eases TM joint loading.

### 6. Arch Wire Selection and Progression - as a tool in controlling axial inclination early in treatment:

Traditional straight wire application relies on incremental increases in arch wire dimension to gradually develop 1st, 2nd, and 3rd order control. The reality is that this approach is not very effective, encouraging many to reconsider the basic premises of straight wire theory<sup>10</sup>. One of the distinguishing features of the "Active Early" approach is the adaptation to "slop" that is present in all straight wire appliances. Through tested case management practices, appliances, and wire selection we can now negate the adverse effects of "slop". It has never made sense to me to start with arch wire forms that are narrower than the case needs to finish esthetically. Working with Ortho Classic, we have created a full suite of arch wires that develop the arches transversely from the outset, through the whole of the buccal segments (Pitts Standard, Pitts Broad), where research has shown that a great amounts of transverse development occurs<sup>11</sup> (Figure 10). In order to help early torque control, **i2, i3 Leashes - are used as a tool of controlling axial inclination early in treatment:** The "rediscovery" by Daniela Storino and other believers of placing incisal "leashes" of elastomeric chain to minimize unwanted tipping of teeth during the relief of crowding is proving very helpful, especially in cases where the anterior brackets have not been "flipped".

### 7. Patient Motivation - as a tool of controlling axial inclination early in

**treatment:** Everything depends on the patient being a full partner in attaining their best esthetic result. Whether it is 24 hour elastics wear, modification of sleep patterns, or doing "PT" exercises, it is important to educate the patient or their parents on their critical participation in the process. Larry White has correctly identified overall compliance as the "Achilles heel" of our profession<sup>12</sup>, and the inadequacy of traditional approaches to change that dynamic. It is critical to have a collaborative relationship with patients in their treatment, to celebrate what they have accomplished, and what their new "possible self" holds for them. This goes beyond "mere cooperation" and beyond the health benefits of orthodontics into the social and psychological benefits of treatment.

### 8. NMI - "neuromuscular intervention" as a tool in improving results:

The control of habits and behaviors that may be detrimental to treatment progress is generally appreciated as critical. By intervening in noxious breathing patterns (SDB sleep disorder breathing, sleep apnea), and noxious muscular behaviors (lip hypotonicity, swallowing patterns, digital habits, lip biting, postural concerns, sleep patterns) the quality of treatment can be improved.

**9. "PRACM" - the critical "read and react" milestone:** If adjustments to bracket position or major mechanics are required to bring the case to an esthetic conclusion, non-adjustable wires are replaced and Stage 1 clinical opportunities continued. If a significant number of brackets have been repositioned or "flipped", it is usually wise to replace the same size non-adjustment wire for one treatment interval.

### Stage 2 - Clinical Opportunities

If the Stage 1 response to treatment has been favorable, Stage 2 adjustments are directed towards refining the occlusion and optimizing the esthetic result. There are a number of clinical opportunities available in Stage 2:

### 10. Arch Wire Adjustments - As a tool of controlling axial inclination, arch form, and transverse arch development:

The "10 tooth smile" has represented the gold standard for dental ethics for years. Today many excellent students of dental esthetics prefer a "12 tooth smile" esthetically<sup>13</sup>, and I agree with them. Due to the fact that the arch form is directly related to the shape of the wire used and not the bracket system the orthodontist decides to use<sup>14</sup>, I do not use "standard arch blanks" but shape

SAP Bracket Position



Figure 7



7 Months



4 Appointments

Figure 8

## H4 Torque Opportunities

Torque	U1	U2	U3	U4	U5
Normal	+12	+8	+7	-11	-11
Flipped	-12	-8	-7		

Torque	L1	L2	L3	L4	L5
Flipped	+6	+6			
Normal	-6	-6	+7	-12	-17
Flipped			-7		

Figure 9

bendable arch wire to optimize posterior arch development for esthetics. Palpation of the buccal and lingual alveolar processes at each appointment is required to ensure that the patient's "biological availability"<sup>25</sup> is not compromised.

Arch forms have tended to be too flat anteriorly, too broad through the cuspid and first bicuspid, and too narrow through the second bicuspid and molars. I found that bending of adjustable arch wires was unavoidable. I have worked with Ortho Classic to produce arch forms that mimic a shape that provides superior esthetics; Ortho Classic's Pitts Standard and Pitts Broad arch forms. I typically use the "Broad" Arch form on all cases from the first bracketing. The only exception is when I have a narrow upper arch combined with a wide lower arch. Then I will use a "Standard" on the lower arch. Research has shown that as much posterior arch development occurs in round wires as occurs in dimensional arch wires<sup>21</sup>, and that is why the Pitts form is available in the same arch form for round, square, and rectangular wires. This feature facilitates an "active early" approach to transverse arch development with a greater degree of torsion control whether using familiar wire progressions or when using Ortho Classic's H4 appliance.

Where unadjusted nickel-titanium or beta-titanium arches have not optimized axial inclination, the practitioner can use shapeable beta-titanium arches for minor corrections (Figure 11). Stainless steel wires are available, however in the "Active Early" approach, I usually only use stainless steel arch wires for extraction cases. We teach necessary posterior torque control in our courses.

**11. "Overcorrection": as a tool of controlling rebound:** With it being generally conceded that permanent retention is a requirement of orthodontic stability, the role of "overcorrection" as a means of guiding the treatment result to a satisfactory conclusion has become more important. In our Masters training program, we spend considerable effort clarifying this complex challenge, but in essence it is advisable to overcorrect A/P, vertical, and transverse discrepancies for period of time, and then discontinue major mechanics as the occlusion adapts to the revised neuromuscular environment. With the improved tolerances of the H4 bracket system, I have found that there is less need for overcorrection of individual rotations.

**12. "CO=CR": as a tool in supporting long term joint health: I treat cases to CR whenever possible.** There has been much discussion of how to best attain this goal. I have gravitated towards a Peter Dawson style approach<sup>15</sup> for manipulating the mandible as something that is reproducible, relatively simple to do, and broadly applicable during the course of treatment. One important aspect of this technique is "bi-manual manipulation" of the mandible as a means of disclosing CO/CR discrepancies, occlusal interferences, and centric "slides" prior to or during treatment. Mandibular position is evaluated at each appointment, and adjustments to mechanics or possibly buccal segment coronoplasty is done to address interferences that develop in the course of treatment. With disarticulation buttons, it is easy to manipulate the mandible. In those cases where manipulation is difficult and CR cannot be reproducibly determined, a "leaf gauge" is used to manipulate, or mounting of models whenever necessary. I have

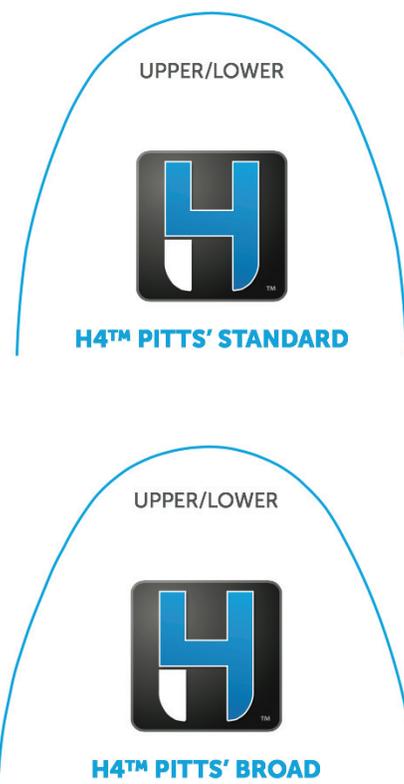


Figure 10

Incisor Display at Rest	2	4
Incisor Display on Smile	2	4
Transverse Smile Dimension	2	4
Resting Lip Support	3	4
Crowding	3	4
Smile Arc	2	4
Buccal Corridors	3	4
Gingival Display on Smile	2	4



Figure 11

Initial Smile Close Up

Progress Smile Close Up

20 Months, 11 Appointments



found diagnostic mountings to be most appropriately applied in selective adults, surgery cases where a maxillary procedure is indicated, or cases where the nature of posterior interferences is uncertain.

**13. "Micro-Esthetic Detailing": as a tool in providing dental esthetics:** David Sarver has championed the role of micro-esthetics in attaining a wonderful orthodontic result in both hard and soft tissues<sup>17</sup>, and I agree completely with his approach. The refinement of "white and pink" esthetic contributions is now a routine part of esthetically superior treatments<sup>18</sup>. We encourage a disciplined approach to both hard and soft tissue refinement during treatment. This includes;

**14. "Tooth size refinement": as a tool in perfecting guidance systems:** No matter how well the brackets have been positioned, or how well the case has been managed, attaining centric stops and guidance patterns requires occlusal adjustments.

**Summary of the Role of Case Management the "Active Early" Approach:**

The art of Orthodontics is constantly evolving with the goal of becoming more efficient, and providing better aesthetic and functional results for our patients. Today with the combination contemporary diagnostic approaches, "Active Early" principles of case management, and purposefully designed and built precision appliances from Ortho Classic; we are excited about the possibilities for the future. The future is so bright I have to wear shades!

Until next time.....



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## Author's Comments



Dr. Tom Pitts



Dr. Duncan Brown

*"Our goal in teaching continues to be to improve esthetic and functional outcomes, while simplifying treatment mechanics and improving predictability, and efficiency. Combining the "14 Keys of Pitts Case Management", an "Active early" approach to treatment, and superior OC H4 self-ligating brackets with Pitt's Broad Arch Forms has gone a long ways to achieving those ends."*

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<sup>4</sup>Pitts, T. Begin with the end in mind and finish with beauty: SIDO Published online: 29/05/2014, 39-46

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<sup>6</sup>Pitts, T. - Begin with the end in mind and finish with beauty: SIDO Published online: 29/05/2014, 39-46

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<sup>9</sup>Pitts, T - OrthoClassic, a leading authority in orthodontics, OrthoTown November 2014

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<sup>12</sup>White, L - Limiting the Sequellae of Poor Compliance - Orthotown November 2014

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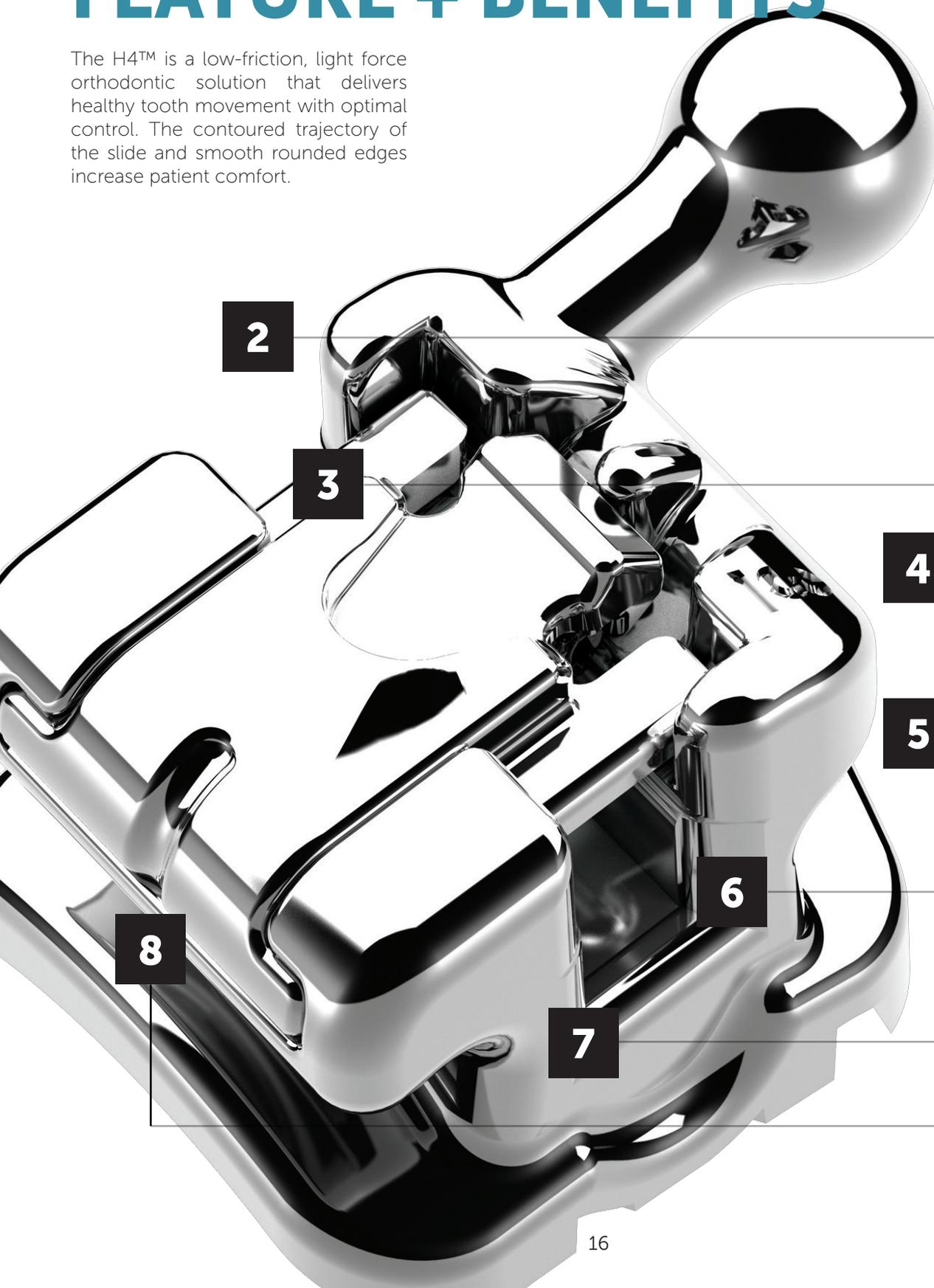
<sup>16</sup>Sarver, D - Enameloplasty and Esthetic Finishing in Orthodontics- Identification and Treatment of Microesthetic features in Orthodontics, JERD Vol 23 No 5, 298-302, 2011

<sup>17</sup>Sarver D - Principles of cosmetic dentistry in orthodontics: Part 3. Laser treatments for eruptions and soft tissue problems, AJODO 2005; 127:262-264

<sup>18</sup>Brandao, R - Finishing procedures in Orthodontics: dental dimensions and proportions, Dental Press J Orthodontics 2013 Sept-Oct; 18(5): 147-74

# FEATURE + BENEFITS

The H4™ is a low-friction, light force orthodontic solution that delivers healthy tooth movement with optimal control. The contoured trajectory of the slide and smooth rounded edges increase patient comfort.



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# SELF-LIGATING SYSTEM

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## Integrated Hooks

Hooks available on 3's, 4's, & 5's

---

## Smooth, Round Edges

For patient comfort

---

## Patent Pending Door

Slides and locks into both open and closed positions. Rounded contours create hygienic doors that repel plaque

---

## Bracket ID

Marks for easier identification

---

## Large Under Tie-Wing Clearance

For easy ligation to support early elastics, ligatures, metal ligatures, and power chain

---

## Slot is Passive in Initial Stages

When using full-sized wire it will make four wall contact. Precise slot depths provide improved 3-4 point rotational and torque control.

---

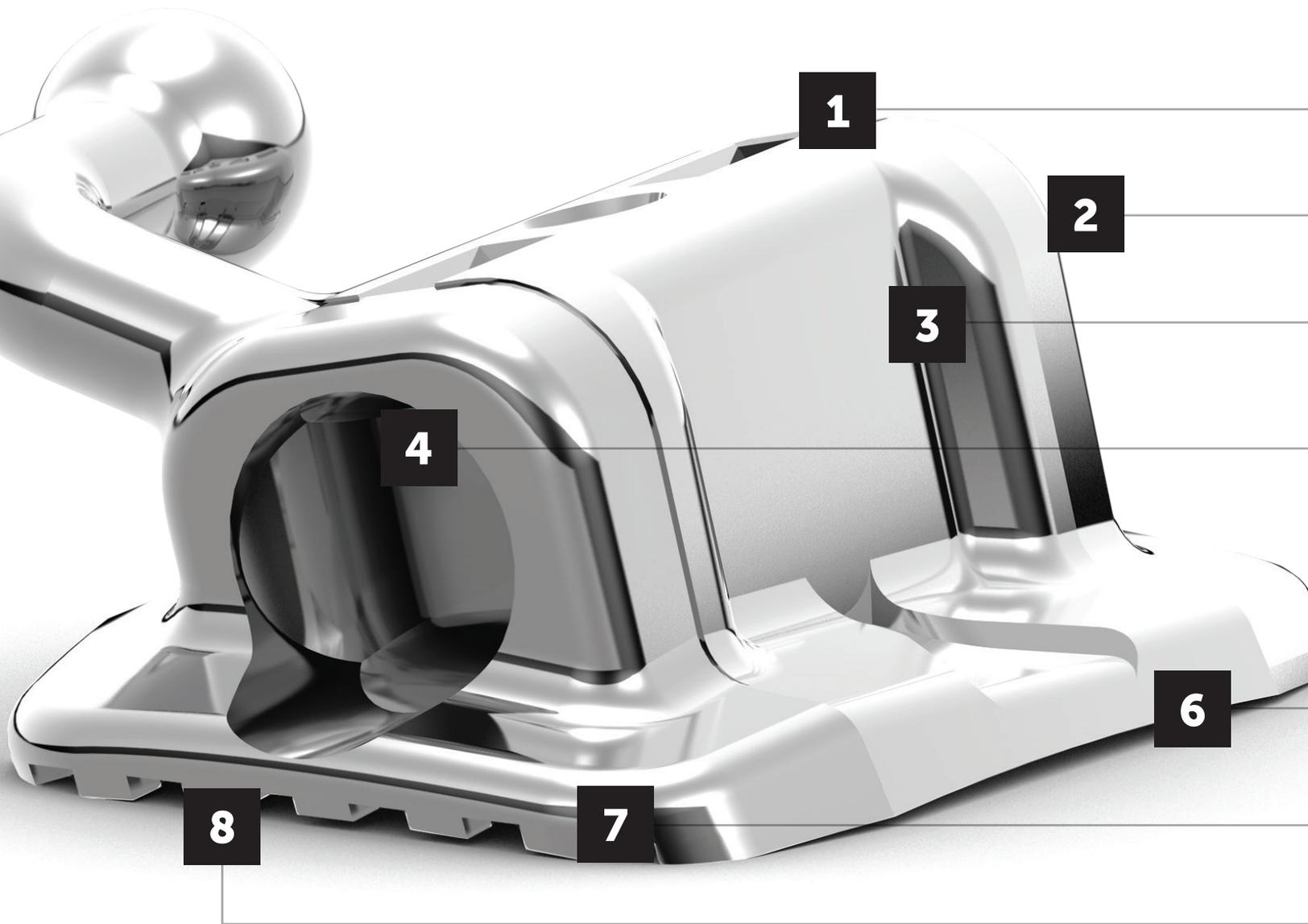
## Minimal Mesial/Distal Width on the Door and Slot

For increased inter-bracket span to fully express the wire

---

## Scribe Lines

For easy bracket placement





# Buccal Tube

---

## Vertical & Horizontal Scribe Lines

For Convenient Alignment

---

## One Piece Metal Injection Molded

Manufactured from Bio-Compatible Materials

---

## Full Radius Low-Profile Design

With Built-In Tweezer Grip

---

## Trumpeted Shape

For Easy Wire Insertion

---

## Smooth, Rounded Edges

For Optimal Patient Comfort

---

## Compound Contoured / Torque-In-Base

Provides Level Slot Line-Up

---

## Direct Bond or Pre-Weld

For Optimum Convenience

---

## Micro-Etched Base

Creates a Stronger Bond

5

### H4™ MAXILLARY (UPPER)

TOOTH	TORQUE	ANGLE	OFFSET	M/D IN MM	COLOR CODE	RIGHT/LEFT	HOOK	.022 SLOT
Central (U1)	+12°	+5°	0°	3.05	●	Right		916.2001
						Left		916.2002
Lateral (U2)	+8°	+9°	0°	2.54	●	Right		916.2003
						Left		916.2004
Cuspid (U3)	+7°	+5°	0°	3.05	●	Right		916.2005
						Left		916.2006
						Right	Distal Hook	916.2007
						Left	Distal Hook	916.2008
Bicuspid (U4, U5)	-11°	+2°	0°	2.80	●	Right		916.2009
						Left		916.2010
						Right	Distal Hook	916.2011
						Left	Distal Hook	916.2012
H4 Buccal Tube (U6,7)	-22°	0°	+9°	3.70		Right	Gingival	907.2099
						Left	Gingival	907.2100

### H4™ MANDIBULAR (LOWER)

TOOTH	TORQUE	ANGLE	OFFSET	M/D IN MM	COLOR CODE	RIGHT/LEFT	HOOK	.022 SLOT
Anteriors (L1, L2)	-6°	0°	0°	2.54	●●	Universal		916.2013
						Right		916.2014
Cuspid (L3)	+7°	+5°	0°	3.05	●	Left		916.2015
						Right	Distal Hook	916.2016
						Left	Distal Hook	916.2017
						Right		916.2018
1st Bicuspid (L4)**	-12°	+2°	0°	2.80	●	Left		916.2019
						Right	Distal Hook	916.2020
						Left	Distal Hook	916.2021
						Right		916.2022
2nd Bicuspid (L5)**	-17°	+2°	0°	2.80	○	Left		916.2023
						Right	Distal Hook	916.2024
						Left	Distal Hook	916.2025
						Right		916.2022
H4 Buccal Tube (L6,7)	-22°	0°	+3°	3.70		Right	Gingival	907.2107
						Left	Gingival	908.2108



# PITTS BONDING PROTOCOL

- 1) Micro-etch molars and lower bicupids
- 2) Rubber cup with pumice
- 3) Rinse and dry
- 4) Etch 30 seconds
- 5) Rinse and Dry (*no water in the air lines*)
- 6) Apply surface bonding resin
- 7) Paint bracket pads with metal primer and blow off with air syringe prior to adding composite. (*This will assure no contaminants are on the pad.*)
- 8) Butter the composite completely into bracket pad
- 9) After the initial few seconds of light cure at placement make sure to do a total of **30 seconds** as final cure. (*This will assure that the material is completely cured in the deep grooves.*)

Ortho Classic recommends  
*TruBond Adhesive and Bonding*



## Pro Tips

- Brackets can be pre-loaded and covered for expediency.
- If blood or fluid contamination is suspected, rub self-etching primer prior to bracket placement.



Dr. Tom Pitts

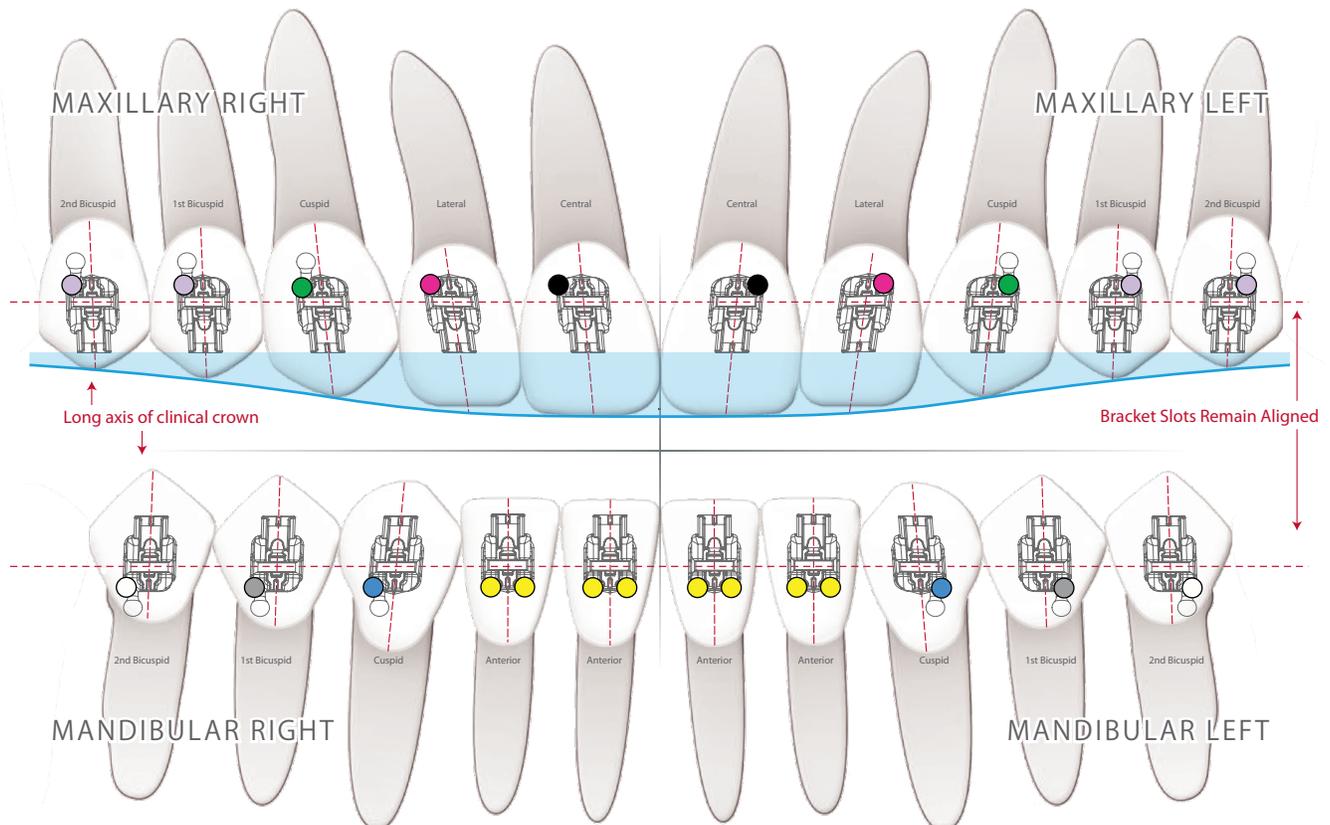
*I'm excited to start using the new TruBond adhesive and bonding system. It has been specially formulated for Ortho Classic. These exclusive bonding and adhesive products should make my bonding protocol easier and more reliable than ever!*



# SMILE ARC PROTECTION™ IN INDIRECT BONDING

*Drs. Tomás Castellanos and Thomas Pitts  
introduce placement of brackets based on  
the effect upon the smile arc*

Part 1 of 2



## Introduction

Facial and smile esthetics are essentially inherent characteristics of the patient. Nonetheless, within morphologic-functional limits, and thanks to the advances in today's orthodontic technology, it is possible not only to obtain an excellent occlusion but to improve patient esthetics according to his/her expectations. Planning the treatment based on facial esthetics as a purpose to protect the smile arc is parallel to a strategy to achieve occlusal purposes. The functional aim of orthodontics is always to achieve a mutually protected occlusion; that is, anterior teeth protect posterior teeth from interference during lateral and protrusive movements, and posterior teeth protect anterior teeth as well, providing an adequate contact in closed-mouth position.

The smile arc, in a frontal view, has been defined as the relationship of the curvature of the superior incisive and canine incisal edges with the curvature of the inferior lip in smiling position. In an ideal smile arc, the curvature of the superior incisal edge is parallel to the lowest smiling lip curvature. The term "consonant" describes this parallel relationship. In a non-consonant or flat smile, the maxillary incisal curvature is flatter than the inferior lip in smiling position.

According to Frush and Fisher<sup>3</sup>, a more sharp curvature of the upper incisal edges from canine to canine is more attractive/youthful than a flatter curvature. Therefore, in individuals who don't show curvature of the lower lip on smile, a smile arc is still the most desirable. The ideal smile arc as a guidance for anterior upper teeth indicates that the purpose should be an ideal position from canine to canine and a functional anterior bite.

Accurate bracket positioning is essential to finish treatment with an excellent occlusion and beautiful smile. Additionally, the most common reason for unnecessary delay of treatment and the discovery of difficulties in the final stage is the incorrect bonding of the appliances. The need for excessive first order bends is not due to a failure in design of the orthodontic appliances, but due to incorrect bracket positioning. When some teeth are in extreme malposition, it is not always possible to place a bracket in an ideal position during the first visit, but it is recommended to attempt to place the brackets in the best possible position to avoid further repositioning and compensatory bendings as treatment progresses.

Previously established positions for bracket placements based on tooth dimensions, as frequently taught in orthodontic courses and programs, are inappropriate for optimum esthetics. For instance, if one assumes that all patients have the maxillary central incisors located 4.5 mm above the incisal edge, lateral incisors at 4 mm, and canines at 5 mm, and the orthodontist fails to account for the relationship of incisal edges with the lower lip, the position may not adjust for the esthetic criteria needed. Customized appliance placements have as much importance as customized treatment plans<sup>4</sup>.

Dr. Tom Pitts has developed a protocol for Smile Arc Protection (SAP) bracket positions that consistently produces beautiful Smile Arcs. Dr. Tomás Castellanos has quantified this esthetic positioning by measuring the length of the teeth. Hence, this is a "Tom-Tom" production.

The vertical positioning of brackets is a challenge for many orthodontists. This problem diminishes when positioning devices and customized tables are used to guide bracket placement, when using direct or indirect bonding.

The Alexander technique<sup>5</sup> uses the premolar height (X in the Vari-Simplex table for bracket heights) (Figure 1) for bracket positions in the entire arch.

For example, if the normal slot height for a premolar bracket is 4.5 mm from the occlusal cusp, the other indicated heights demonstrated by this table should be 5.0 mm for canine, 4.0 mm for lateral, and 4.5 mm for centrals.

The MBT™ table (Figure 2) offers another commonly used bracket positioning guide. It suggests average positions for brackets in the maxillary arch of 4.5 mm for the first premolar (X - 0.5 mm.), 5.0 mm for canine (X), 4.5 mm for lateral (X - 0.5 mm), and 5.0 mm for central (X)<sup>6</sup>.

These and other techniques for bracket placement, based on popular tables and positioning devices, provide accuracy and high reproducibility. Unfortunately, bracket placements with these height discrepancies typically flatten the smile curve.

Bracket Height	
<b>Maxillary Arch</b>	
Centrals	X
Laterals	X - 0.5 mm
Cuspids	X + 0.5 mm
Bicuspids	X
1st Molars	X - 0.5 mm
2nd Molars	X - 1.0 mm
<b>Mandibular Arch</b>	
Centrals	X - 0.5 mm
Laterals	X - 0.5 mm
Cuspids	X + 0.5 mm
Bicuspids	X
1st Molars	X - 0.5 mm

Figure 1: Table of Vari-Simplex bracket heights

Flattening of the smile arc during orthodontic treatment can occur by different mechanisms. The normal alignment of maxillary and mandibular dental arches may result in a reduction of curvature of the upper incisors with respect to the inferior lip curvature.

Ackerman, et al.,<sup>4</sup> evaluated smile arcs in treated and non-treated patients in their own practices. Almost 40% of the treated patients presented discernible changes in the smile arc with flattening of the smile arc occurring in 32%. In the control group (which was the treated group), 13% presented changes in the smile arcs, but flattening occurred in only 5% of this group. They reported no gender differences regarding smile features in treated or untreated groups.

Part 2 will introduce a new table to guide vertical placement of brackets, based on the smile arc effect – therefore, the table is named Guide Position Smile-Arc (GPS-A) (Images 1 & 2).

Look for part 2 of the SAP article in our next issue of Pitts' Protocol.

MBT™ Versatile Appliance Bracket Placement Guide							
7	6	5	4	3	2	1	High
2.0	4.0	5.0	5.5	6.0	5.5	6.0	+ 1.0 mm
2.0	3.5	4.5	5.0	5.5	5.0	5.5	+ 0.5 mm
<b>2.0</b>	<b>3.0</b>	<b>4.0</b>	<b>4.5</b>	<b>5.0</b>	<b>4.5</b>	<b>5.0</b>	<b>Average</b>
2.0	2.5	3.5	4.0	4.5	4.0	4.5	- 0.5 mm
2.0	2.0	3.0	3.5	4.0	3.5	4.0	- 1.0 mm
7	6	5	4	3	2	1	Low
3.5	3.5	4.5	5.0	5.5	5.0	5.0	+ 1.0 mm
3.0	3.0	4.0	4.5	5.0	4.5	4.5	+ 0.5 mm
<b>2.5</b>	<b>2.5</b>	<b>3.5</b>	<b>4.0</b>	<b>4.5</b>	<b>4.0</b>	<b>4.0</b>	<b>Average</b>
2.0	2.0	3.0	3.5	4.0	3.5	3.5	- 0.5 mm
2.0	2.0	2.5	3.0	3.5	3.0	3.0	- 1.0 mm

Figure 2: MBT™ Versatile+ Appliance Bracket placement guide. MBT™ is a registered trademark of 3M Unitek. Table is used as reference and does not imply any affiliation with or endorsement by them.



Image 1: Smile curve flattened after orthodontic treatment. Brackets bonded with conventional heights. (Patient treated by Dr. Tomas Castellanos - MBT brackets)



Image 2: Consonant Smile-Arc, results of bonding brackets with GPS-A (Guide Position Smile-Arc) Tom-Tom (Patient treated by Dr. Tomas Castellanos - H4 brackets).



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### Author's Comments

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Dr. Tom Pitts



Dr. Tomas Castellanos

*"With more Orthodontists developing skills at indirect bonding, we believe that the "SAP protection for protocol for indirect bonding" will greatly improve consistency of esthetic results, while still capitalizing on the doctor time savings associated with the indirect technique. We will complete this discussion in Part 2"*

<sup>1</sup>Pitts T. Begin with the end in mind: Bracket placement and early elastics protocol for smile arc protection. Clin Impres. 2009;17(1):1-11.

<sup>2</sup>Sarver D, Ackerman MB. Dynamic smile visualization and quantification: Part 1. Evolution of the concept and dynamic records for smile capture. Am J Orthod Dentofacial Orthop. 2003;124(1):4-12.

<sup>3</sup>Frush JP, Fisher RD. The dynesthetic interpretation of the dentogenic concept. J Prosthet Dent. 1958;8:558-581.

<sup>4</sup>Ackerman JL, Ackerman MB, Brensinger CM, Landis JR. A morphometric analysis of the posed smile. Clin Orthod Res. 1998;1(1):2-11.

<sup>5</sup>Alexander W. Build treatment into bracket placement. In: The 20 Principles of the Alexander Discipline. Chicago, IL: Quintessence; 2008:59.

<sup>6</sup>McLaughlin R, Bennett J, Trevisi H. Systemized Orthodontic Treatment Mechanics. Philadelphia, PA: Mosby; 2001:60-65.

## H4™ Pitts' Broad Archwire

Understanding that each case requires specific attention to detail, we have narrowed down the archwires to the sizes and materials that work best in the H4™ system. The wire slot has been meticulously designed to create the best coupling with larger dimension wires, providing four-wall contact for slot-coupling torque expression.

		H4™ PITTS' BROAD (NO DIMPLE)	H4™ PITTS' BROAD (DIMPLE)	H4™ PITTS' BROAD (PRE-STOPPED)	
INCHES	MM	ITEM NUMBER	ITEM NUMBER	ITEM NUMBER	
<b>THERMAL ACTIVATED NICKEL TITANIUM</b>					
<b>10 PACK</b>	.012	.30	620.0400	621.0400	320.0400
	.014	.36	620.0401	621.0401	320.0401
	.016	.41	620.0402	621.0402	320.0402
	.018	.46	620.0403	621.0403	320.0403
	.020	.51	620.0410	621.0410	320.0410
	.018 x .018	.46 x .46	620.0412	621.0412	320.0412
	.020 x .020	.51 x .51	620.0409	621.0409	320.0409
	.014 x .025 (Extraction)	.36 x .64	620.0404	621.0404	320.0404
	.016 x .025 (Extraction)	.41 x .64	620.0405	621.0405	320.0405
	.018 x .025 (Extraction)	.46 x .64	620.0407	621.0407	320.0407
	.019 x .025	.48 x .64	620.0408	621.0408	320.0408
.021 x .025	.53 x .64	620.0411	--	320.0411	
<b>SUPER ELASTIC NICKEL TITANIUM</b>					
<b>10 PACK</b>	.014	.36	625.0401	--	325.0401
	.018	.46	625.0403	--	325.0403
	.020	.51	625.0410	--	325.0410
	.017 x .017	.43 x .43	625.0415	--	325.0415
	.020 x .020	.51 x .51	625.0409	--	325.0409
<b>STAINLESS STEEL</b>					
<b>10 PACK</b>	.020 x .020	.51 x .51	651.0409	--	--
	.016 x .022	.41 x .56	651.0414	--	--
	.016 x .025	.41 x .64	651.0405	--	--
	.017 x .025	.43 x .64	651.0406	--	--
	.018 x .025	.46 x .64	651.0407	--	--
	.019 x .025	.48 x .64	651.0408	--	--
<b>BETA TITANIUM</b>					
<b>5 PACK</b>	.020 x .020	.51 x .51	646.0409	--	--
	.016 x .025	.41 x .64	646.0405	--	--
	.017 x .025	.43 x .64	646.0406	--	--
	.018 x .025	.46x .64	646.0407	--	--
	.019 x .025	.48 x .64	646.0408	--	--
	.021 x .025	.53 x .64	646.0410	--	--

COMING SOON

## H4™ Pitts' Archwire Sequence

WEEKS	NON-EXTRACTION		FLIPPED NON-EXTRACTION		EXTRACTION	
5						
10						
15	.018 or .018 x .018 Thermal Activated (8-10 weeks)					
20						
25	PAN-REPO ADJUST CASE MANAGEMENT (PRACM)					
30						
35	.020 x .020 Thermal Activated					
40					.018 x .025 Stainless Steel	
45	.019 x .025 Beta Titanium	.020 x .020 Beta Titanium	.019 x .025 Beta Titanium	.020 x .020 Beta Titanium		
50+					.019 x .025 Beta Titanium	.020 x .020 Beta Titanium
	.017 x .025 Beta Titanium					

Courtesy of: Dr. Tom Pitts and Dr. Duncan Brown

-  **RESET BRACKETS OR PICK UP SECOND MOLARS**
-  **FOR ENMASSE SPACE CLOSURE**
-  **TO DEACTIVATE THE APPLIANCE WHEN IDEAL AXIAL INCLINATION ATTAINED OR BIOLOGICAL LIMIT IS REACHED**



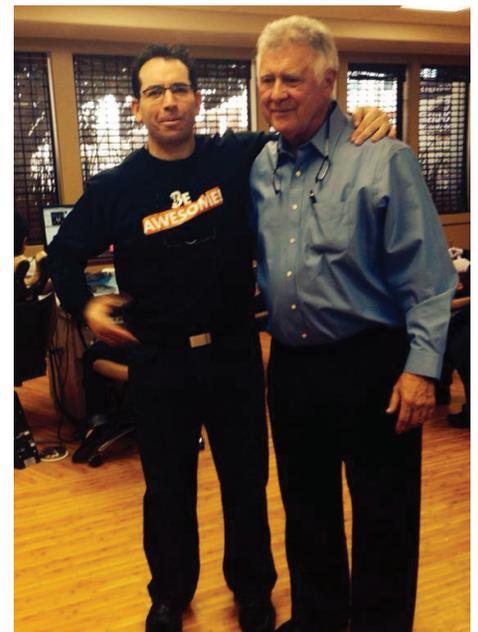
# The Big Switch

## How I Converted my Office to H4

When I started my practice over 10 years ago, I immediately chose to use the Damon System. The smiles that I saw Drs. Damon, Bagden and Pitts creating were the type of smiles I wanted for my patients. The innovation they brought to our specialty was unparalleled at the time. You would be hard pressed to find a group of orthodontists this skilled and passionate, yet so approachable and willing to help me navigate the early years of passive self-ligation. I was always impressed how available they made themselves to me and how dedicated they were to perpetually improving. I had an opportunity to visit Dr. Pitts' practice early on in my career and was blown away by the

things he could accomplish for his patients without extractions, surgery or other invasive procedures. Dr. Pitts helped open my eyes even further to the differences between straightening teeth and creating incredible smiles. One of my core values has always been to make treatment more comfortable while removing barriers and this system helped me to accomplish this goal.

The one thing I have always really liked about self-ligation is the precision in the system. The door is either open or closed; therefore, ligation is virtually identical for every patient no matter the operator. I believe this has led to more consistent and efficient



*Dr. Bernstein with long time mentor and friend, Dr. Tom Pitts*

results for my patients. When these crucial results started to become inconsistent, our efficiency was reduced due to the need for extra appointments. There was now more wire bending, replacing hooks, and repositioning brackets, which resulted in more visits, missed school, etc. for my patients. The statistical data showed that decreases in efficiency correlated with the switch to the latest generation of bracket we were using at the time, which we had not seen with the previous generation. So it became time to look for an alternative solution.

I started looking at possibly using active self-ligation to overcome the engagement issues we were seeing. The more I searched the more I came to realize that there were so many companies out there making self-ligation brackets. However, to me it has always been about the people behind the brackets and system and not about buying the cheapest knock-off.



Visiting Ortho Classic in McMinnville, OR. With Kamal Ali and Rolf Hagelganz (owner).

Remember I started from zero with the most expensive bracket system in the market.

I then heard that my long time mentor and friend, Dr. Tom Pitts, was using a new passive self-ligating bracket that Ortho Classic had created. Not wanting to do any experimenting with my core bracket system, I waited until it had gone through several stages of development. I also visited a busy office that had made the switch (thanks Dr. David Herman) and consulted with their clinical team who had not missed a beat during the transition. I then visited the factory and was blown away by the facility and passion of the people working there. Only then, after careful planning, did I decide to make the switch to H4. I urge anyone who is considering making the switch to do the same.

The cherry on top is the unique OrthoVend machine that Ortho Classic has developed. It dispatches brackets as you need them with no up-front cost. No more high holding costs from a massive bracket inventory! This has become crucial to my cash flow, especially with multiple locations, helping me continue to make orthodontic treatment more affordable for my patients. It is also nice to no longer receive phone calls from my rep trying to make quarterly sales numbers.

It is really nice being able to deliver all the wonderful benefits I learned from years of using my previous passive self-ligating system but with a more reliable and consistent bracket. I will always be grateful to the doctors who helped grow the passive self-ligation technique. It is because of their efforts that we have gained so much. The H4 bracket system is a little different and takes a little getting used to but I can say after using it for almost a year that it is performing exceptionally well, and as expected, my patients are benefiting from the change.

## Author's Comments



"I believe in a personal, caring and comfortable approach to orthodontic treatment using the latest technology to make your treatment as efficient and convenient as possible, with emphasis on interceptive, non-extraction therapy."  
**Rael Bernstein**  
 D.D.S., M.S.



## Upcoming Events

### **AEEDC**

Dubai, UAE  
February 17 - 19, 2015

### **University of Texas**

Austin, Texas  
February 26, 2015

### **Dr. Tom Pitts Lecture**

Colombia – Bogota & Cartagena  
March 03 - 11, 2015

### **IDS Meeting**

Cologne, Germany  
March 10 - 14, 2015

### **Dr. Daniela Storino Lecture**

Poland  
March 13 - 14, 2015

### **Master Course Part I**

Reno, Nevada  
March 26 - 28, 2015

### **Dr. Tom Pitts Lecture**

South Korea  
April 08 - 11, 2015

### **Dr. Tom Pitts Lecture**

Taiwan  
April 08 - 11, 2015

### **Dr. Tom Pitts / Dr. Duncan Brown Lecture**

Boston, Massachusetts  
May 08, 2015

### **2015 AAO**

San Francisco, California  
May 15 - 19, 2015

### **Dr. Tom Pitts Lecture**

San Diego, California  
May 29, 2015

### **EOS**

Venice, Italy  
June 13 - 18, 2015

### **ECO**

Luxembourg  
June 19 - 20, 2015

### **Dr. Tom Pitts Lecture**

San Diego, California  
July 24, 2015

### **Dr. Tom Pitts Advanced Course**

UNAM, Mexico  
July 29-31, 2015

### **Master Course Part II**

Cartagena, Columbia  
September 10 - 12, 2015

### **Pinnacle Meeting**

TBD  
Fall, 2015

### **SIDO**

Milan, Italy  
October 29 - 30, 2015

### **Dr. Tom Pitts Lecture**

Warsaw, Poland  
November 06 - 07, 2015

### **Master Course Part III**

Calgary, Canada  
March 10 - 12, 2016

### **Master Course Part IV**

McMinnville, Oregon  
September 15 - 17, 2016

*\*Dates and location may be subject to change*

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The American Academy of Sleep Medicine recommends oral appliances, like the TAP family of appliances, as a first line of treatment. Treatment such as snoring, mild and moderate sleep apnea, and in cases of severe apnea when continuous positive airway pressure (CPAP) therapy has not worked. The right oral appliance can help patients avoid surgery, medications and more cumbersome therapy.

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- Allows support for the jaw joint
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