



Self-ligation: The Future of Orthodontics

White Paper by
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Dr. Jerry Clark was born and raised in Philadelphia, Pennsylvania. He obtained his undergraduate and dental degree from the University of North Carolina. He served in the Navy for two years and also practiced general dentistry for two years. He then attended St. Louis University where he obtained his Master's Degree in Orthodontics. Since graduation, Dr. Clark has maintained an orthodontic practice in Greensboro, North Carolina. He has been certified by the American Board of Orthodontics.

Dr. Clark is also the Chairman of the Board of Bentson Clark, a consulting firm providing strategic business planning for orthodontists including: orthodontic practice valuation, transition, and financing services.

He is a highly sought after speaker on all aspects of orthodontic practice management and practice profitability. He has spoken

throughout the United States and also in Canada, Europe, and Australia. He has written numerous articles which have appeared in the orthodontic literature including the: AJO-DO, Journal of Clinical Orthodontics, and many other orthodontic publications.

Dr. Clark has been using GAC's In-Ovation-R brackets since 2003 and has successfully completed hundreds of cases. Dr. Clark believes that self-ligating brackets are "the future of orthodontics", as was stated by Dr. William Proffit, former chairman of the orthodontic department of the University of North Carolina. This report is designed to give the orthodontic practitioner a better understanding of self-ligating brackets and why Dr. Clark has chosen In-Ovation-R as his bracket of choice for his practice.

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Self-ligation – The Future of Orthodontics

by Dr. Jerry Clark

“Self-ligation is the future of orthodontics!” These words were spoken by Dr. Bill Proffit, former Chairman of the Department of Orthodontics at the University of North Carolina. A pretty strong statement, but I must say one with which I totally agree. Dr. Robert Keim, Editor of the Journal of Clinical Orthodontics, stated that the future of orthodontics will focus on three main areas: 3-D imaging to replace two dimensional cephalometry, self-ligating brackets, and micro-implants as endosseous anchorage.¹ Over the years the basic design of the orthodontic bracket has evolved from the initial brackets used by Dr. Edward Angle, to the twin bracket, to the pre-angulated/pre-torqued bracket designed by Dr. Larry Andrews, and now to the self-ligating pre-angulated/pre-torqued bracket.

Scientific evidence, what’s available?

Unfortunately, at this time, there is very little hard scientific evidence available to justify many of the claims made by those advocating the use of self-ligating brackets. I strongly encourage the orthodontic scientific community to devise serious research studies to prove or disprove the efficacy of self-ligation.

However, the well-designed scientific studies will take years to produce definitive, verifiable results. In the meantime, I believe those orthodontists who do not try self-ligation for themselves will be missing out on a major breakthrough in orthodontic bracket design. It is my opinion however, that one does not have to know exactly how birds are able to fly to realize that they are, in fact, capable of flight.

Daily, I can watch and marvel at their beauty and grace in flight. Today, with fewer than 100% of orthodontists using self-ligating brackets, it is obvious that many of my colleagues have been unwilling to avail themselves of a magnificent step forward in the efficient treatment of our orthodontic cases. As a practicing orthodontist, I can utilize my own personal experience with self-ligation to draw conclusions as to the efficiency and effectiveness of the bracket. That is the reason I am writing this paper, to strongly encourage every orthodontist to take advantage of what I consider to be the newest and latest significant advancement in orthodontic bracket design, the self-ligating bracket.

What is the history of self-ligating brackets?

It may come as a surprise to you but the self-ligating brackets are not a new development in orthodontics. In the mid-1930s the Russell attachment was the first recorded attempt to reduce ligation time and enhance clinical efficiency.² Some of the early self-ligating brackets were the Ormco Edgelok (1972), Forestadent Mobil-Lock (1980), Orec SPEED (1980), and “A” Company’s Activa (1986).³ This

effort to develop self-ligating orthodontic brackets is being fueled by a desire to create a bracket that will more efficiently and more effectively move teeth. That would create the benefits for our patients of quicker treatment, hopefully less discomfort in tooth movement, the need for fewer office visits and fewer archwire changes, while still producing quality treatment results.

Self-ligating brackets, what’s available today?

Today, practicing orthodontists have quite a few options to choose from, if they are interested in trying some type of self-ligating bracket. The SPEED bracket (Strite Industries, Canada) has been around the longest and has a small but devoted following of users. Probably the most popular self-ligating bracket in use today is the Damon bracket (Ormco) developed and promoted by Dr. Dwight Damon, Dwight is an extremely accomplished and gifted clinician, and he presents in his lectures some of the finest treatment results that I have ever seen demonstrated by a clinician. Unitek has developed the Smart Clip bracket to compete in the self-ligation market. The Time bracket (American Orthodontics) is another self-ligating bracket that is available for our use. Most recently Class One Orthodontics has entered the self-ligation arena with their Carriere SLB bracket. GAC has produced the In-Ovation® R bracket, and this is the bracket which I am now using in my practice.

Why do I use In-Ovation R?

I have tried many of the self-ligating brackets, and I have found

the In-Ovation® R bracket to provide the advantages that I was looking for in a bracket. Figure 1 includes many of the attributes I believe my colleagues are searching for in the design of the bracket that they want to use in their practices. Figure 2 provides a list of the reasons why I like In-Ovation® R and use it as the bracket of choice in my practice.

I feel the people at GAC have listened carefully to practicing orthodontists and determined what orthodontists were looking for in the design of their self-ligating bracket. The brackets are available in .018 and .022, they are available in just about every torque and angulation you would desire, and the ins and outs are such that little or no archwire bending is required to effectively finish your cases. In the vast majority of cases I treat, I have found at the end of treatment if a tooth is in the wrong position, it is most likely due to poor bracket placement on my part. In my practice In-Ovation® R has proved to be extremely reliable with only one clip failure in over 10,000 brackets placed. These brackets have also allowed me to see my patients at longer time intervals (8 to 12 week appointment intervals). I have found that there are fewer archwire changes required to effectively treat my cases, and although not scientifically proven, I know we are treating patients more quickly than with traditional edgewise brackets. With fewer archwire changes, using heat sensitive archwires, and by being able to move teeth with less friction, I feel the teeth are moving faster with less discomfort to the patient.

From a business standpoint having to see patients less often, with fewer archwire changes, and utilizing less chair time at each appointment has added greatly to the profitability of our practice. The bottom line is I can now see more people in less time, and as orthodontists our time is all we have to sell. The more productive and profitable I can be each hour I work, the greater the practice profitability. Granted, In-Ovation® R and all self-ligating brackets are more expensive than traditional edgewise brackets; they need to be because they are much more expensive to manufacture. However, the time savings will allow you to be more productive with your time and therefore more profitable. Therefore, the small additional expense you pay for these brackets is more than justified by the increased productivity potential.

I would never use any product that would in any way compromise the quality of care for my patients and the treatment results that I am able to achieve. It is my strong belief that the In-Ovation® R bracket provides significant benefits not only to our practice but also to my staff, and most importantly to my patients. Listed Figures 3, 4, and 5 are just some of the ways to enhance your practice value with self-ligation.

What makes In-Ovation® R different from other brackets?

What I believe truly sets the In-Ovation® R bracket apart from the other self-ligating brackets available on the market today is its unique and patented clip

What do orthodontists desire in a bracket?

- Efficient and effective tooth movement
- Accurate tooth alignment
- Ability to torque teeth individually
- Stays on tooth
- Easy to debond when desired
- Ease of wire ligation
- Minimum chair time to treat case

Figure 1

Why do I like GAC's In-Ovation R ?

- Pad design fits tooth
- Rhomboid-shaped base for easy placement
- Torque in base design
- Available in almost any prescription
- Proper ins and outs
- Rotational control is superb
- Ease of wire ligation
- Minimum chair time to treat case
- Reliability of bracket and clip
- Fluoride treated slide mechanism
- Perfect width and size
- Tie wings accept ties and elastic chains
- Positive clip seating
- Strong and durable
- Bicuspid notch for easy clip opening
- Flexible clip design
- Active/Passive ligation
- Can use your own treatment mechanics

Figure 2

Enhancing your practice value with SL

The Patients

- Reduced treatment time
- Patient's time – shorter appointments
- Patient's time – longer appointment intervals
- Easier and fewer wire changes
- Gentle wires
- Quality of treatment

Figure 3

design with its Active/Passive properties (see Figure 6). The Passive properties of the bracket clip allow smaller round wires to exert their unique biomechanical properties and their flexibility to effectively rotate and align the teeth. The Active properties of the spring clip exerted on square and rectangular archwires allow these wires to be “actively” seated into the bracket slot to effectively transmit torque to the tooth. I believe these characteristics of the bracket allow for efficient and effective tooth movement while maintaining complete control of all the tooth in ALL three planes of space.

Case Study

I want to demonstrate one case that was successfully treated with In-Ovation® R brackets. I know full well that one case does not really tell the whole story, since all of us can find excellent cases we have treated to demonstrate points we are trying to make. However, this is a very difficult case, and I believe I was able to achieve better results, in a shorter

The Staff

- Easier wire changes
- More patient interaction time
- Less stress – greater patient comfort
- Positive wire seating – eliminates guesswork
- Confidence in treatment
- Pride in quality of treatment

Figure 4

period of time, with fewer patient visits, with less discomfort to my patient, requiring less patient chair time by utilizing the In-Ovation® R bracket than I could have by using my traditional edgewise brackets.

This is a 12 year 6 month old patient who presents: a Class II, division 1 subdivision left malocclusion, a severe lateral open bite on the right side, tooth #4 is congenitally missing, tooth #A is still present and is ankylosed, tooth #7 has a large lingual cusp, the upper incisors are protrusive, and the midlines are off (Figure 7).

Treatment from start to finish took less than two years and as you will note in (Figure 8) we have: reduced the prominent lingual cusp of tooth #7, extracted tooth #A, closed the space created by the removal of tooth #A, corrected the midline discrepancy, closed the open bite while not creating a canted occlusal plane, created a highly esthetic smile line, and obtained an excellent occlusal relationship.

The Practice

- More doctor patient interaction time
- Chair time savings
- Greater consistency of treatment
- Quality of treatment results improved
- Profitability
- Easier to transition or sell practice

Figure 5

The In-Ovation® Interactive System



Passive - Allows free sliding of small, round wires for quicker leveling and aligning



Interactive - As arch wire size increases, clip contacts the wire only if tooth is not correctly aligned



Active - Provides control of rotations and torque expression during the third stage of treatment

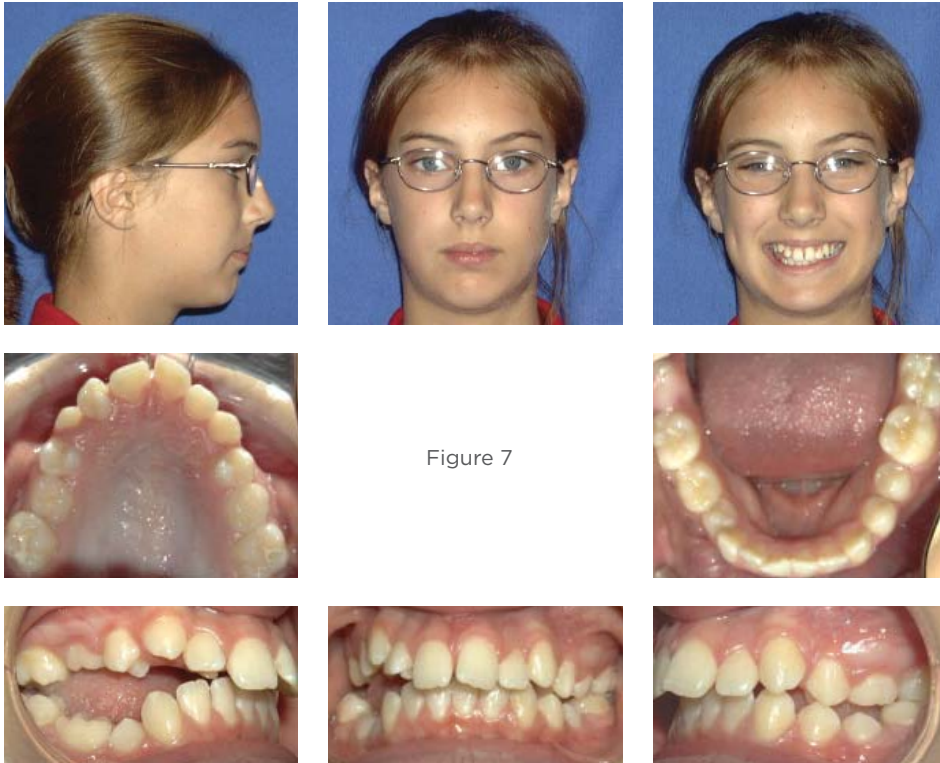
Figure 6

Finally!

If what Dr. Proffit said is true and self-ligation is the future of orthodontics, and I for one believe that it is, then I am even more convinced than ever that the In-Ovation® R bracket is the self-ligating bracket of the future.

After using the In-Ovation® R bracket for over two and one-half years and having completed hundreds of cases I truly believe that this bracket allows me to provide the very finest treatment for my patients. I urge all my colleagues to try self-ligation. I

urge them to try the self-ligating brackets that are available on the market today. I also feel that once you have, you will come to the same conclusion at which I have arrived: The In-Ovation® R bracket is the finest orthodontic bracket available on the market today.



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