

Question & Answer

*An interview with the inventor
of the New Carriere LX™
Passive Self-Ligating Bracket,
Dr. Luis Carriere, DDS, MSD*

As the developer of the new Carriere LX Self-ligating Bracket (SLB) System, tell us what makes this bracket unique?

The Carriere LX integrates different design concepts with the primary goal of benefiting the patient. The main objective is to preserve a patient's periodontal structures without compromising the doctor's precision and control. The bracket does this with simplicity and minimalism.

The goal in orthodontics today is low friction, low force. Does the Carriere LX system meet this goal?

Yes, the system meets this goal by providing "a freedom of fit" in the bracket and archwire interface. In the body of the bracket, the mesial and distal edges of the slot have been carefully rounded for free sliding. The bracket wire interface has a four-wall design that converts it into a passive system. This, working together with the low force super-elastic archwires, provides synergistic action. The physiological orthodontic force on the periodontal structures results in a faster treatment.

Compared to other self-ligating brackets in the market today, what makes Carriere LX better than the rest?

That question has to be answered by presenting the unique benefits to the patient and the doctor. Getting a bracket that is nickel free protects the patient. It is smaller and less complicated to wear, because the locking mechanism is in the front. This makes oral hygiene much simpler, and the bracket is more comfortable because it's anatomically contoured.

For the doctor, the locking mechanism is precise, gentle and free sliding. It can be easily opened with an explorer and closed by using finger pressure. This results in fast and easy archwire changes. The closing direction of the slide is in the gingival direction, which doesn't interfere with mastication. In severely crowded cases, especially in lower incisors, the opening of the slide towards the incisors makes it easier to insert the wire. The slide opening in the occlusal direction allows, if necessary, brackets with posts on the gingival side. The Metal Injection Molded (MIM) bracket provides maximum precision and strength.

Carriere LX is a completely passive self-ligating system. What does that mean, and how is it different from a passive/active system?

In the Carriere LX, "passive" means that the four wall channel is the "built in" component and the bracket slot, "loosely" contains the "built out" component, the archwire. The metal-to-metal contact allows the archwire to slide easily inside the Carriere LX with a free but controlled movement. Using progressively different sizes of super-elastic archwires, results in the periodontal supporting tissue having a healthier and faster response to the force. Less force in only one direction allows a smaller periodontal surface to be used which means less cellular activity there. Treatment time is safely reduced, and orthodontic results are achieved with maximum comfort for the patient.

This benefits doctors, their staff, and reduces treatment costs. Our "passive" orthodontic philosophy can be "activated" when we are interested in using more force. This happens later in the treatment when larger rectangular archwires can be used.

At this level of treatment, brackets are properly aligned and there is no problem placing larger rectangular super-elastic archwires in the bracket tunnel to "activate" the system. We can do this without losing the original spirit of keeping "free but controlled" close contact between the rectangular archwire edges and the bracket walls. This preserves the periodontium without binding, and permits free slide under control and precision of dental movement.



Luis Carriere, DDS, MSD is the inventor of the Carriere Self-Ligating Bracket (SLB). He received his DDS from the Universidad Complutense in Madrid in 1991 and an MSD in Orthodontics and Dentofacial Orthopedics in Adults and Children from the University of Barcelona, School of Dentistry, in 1994. Some of the prestigious highlights of his distinguished career include the Joseph E. Johnson Award from the American Association of Orthodontists in 1995, being a Guest Professor in the USA and Italy, and a member of the Editorial Review Board for the American Journal of Orthodontics and Dentofacial Orthopedics. He is a Member of leading international orthodontic associations, has published influential articles, and most recently, he won The International P/M Design Competition in 2004.

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In this way, we take advantage of the “loose interplay” that we want between the “built in” and “built out” components of the bracket/wire binomial union. It is this unique condition that characterizes our passive Carriere LX system.

For doctors using the Carriere LX, how does the treatment time differ ver traditional bracket use? And why? In general, what treatment time can be expected using this self-ligating bracket?

Traditional brackets create additional strain on the periodontal structures. The tight binding of a traditional bracket to an archwire causes a “global state of war” in the supporting tissues. Each time a new archwire is used, the patient experiences pain and discomfort. If we tighten the archwire, this will cause more pain to an area that is already irritated.

Carriere LX applies gentle and consistent force to the teeth’s supporting tissue that produces results, without harming the tissue. Bracket-wire friction is significantly reduced. There is no pain, and the patient is more comfortable. Plus, the smaller size and contoured edges add to the comfort. Treatment time is reduced, on average, 35%. This percentage can rise in cases where a positive response is achieved sooner, and there is active patient cooperation.

Tell us about the ease of archwire changes and what does this mean to the doctor?

The fourth wall bracket slide is placed in the front. The design is so perfect it can be opened smoothly with a simple explorer and closed with a gloved fingertip. You know that it has closed securely when you hear the “click.” This precise mechanism makes it fast and neat to change archwires. Because it is so much faster, the doctor and his staff will save valuable time.

What archwire sequence, shape, and design do you prefer?

The proper “sequence” is critical in using the Carriere LX for treatment. In order to get optimum results with our biomechanical system, the wires have to be placed in an ordered sequence. I begin with light, super-elastic archwires that deliver a very light force. This “wakes-up” the case movement and causes minimal periodontal reaction. Cases are started with a progression of round, super-elastic archwires. This promotes correction of rotations, cross bites, vertical and vestibulolingual movements (bracket alignment). Intrusion translation movements and torque are provided by edgewise type super-elastic archwires. Space closure is done with posted stainless steel archwires. The finishing details are taken care of with soft, edgewise CNA archwires. As an option, at the end of treatment, to promote better interditation, a final settling of the case can be done with round light stainless steel archwires.

Of all the cases completed with Carriere LX, what impresses you the most about the system? Any common elements?

Cases completed with the Carriere LX exhibit surprisingly fast results with a longer span between appointments. Activations and changing archwires takes a shorter time. Posterior bracket posts make it easy to insert any kind of elastic traction needed for the occasion. Patients love the pain-free comfort and tell us so. This is especially important for our adult patients. It’s very satisfying on a personal level and satisfying to the doctor professionally to be able to deliver a biologically safe and respectful treatment to the patient.

What is the patient’s response to using a self-ligating system – and the low profile of Carriere LX?

The patient’s response to using the Carriere LX has been very gratifying. They appreciate the smaller brackets. It makes their day more pleasant, because food does not get trapped in them and they’re easier to clean. The low profile and soft rounded edges and corner areas are much more comfortable. We hear a lot about this from our adult patients. In addition, because the locking mechanism is in front, patients easily understand how the Carriere LX works. This makes them feel more confident. Patients become more cooperative because, when they understand how it works, they can follow the logics of the treatment steps and the process that will lead to the results they are eagerly anticipating. ♦♦♦