

CHAPTER 3

SELF-LIGATING BRACES

DR. ALEXA A. ALBORZI

Dr. Alexa Alborzi lives her life with the maxim of *“Do onto others as you want done to you.”* This has found its way into her career as well. Even when she chooses treatment modalities, she considers, “Do ‘I’ want that done to me?”

Dr. Alborzi started her career in orthodontics 21-years ago. As the phrase goes “time sure does fly when you’re having fun.” She feels that way about her work – and she really means it. She couldn’t have chosen a more fulfilling and fun career.

Her career began with her specialty education at the University of Connecticut Health Center. Her training was with the use of twin brackets (AKA standard braces) with a heavy emphasis on biomechanics. This was fortunate because it gave her a very strong mechanical background for solving problems. She also taught twin bracket biomechanics for 14 years as an adjunct professor at the University of California, San Francisco Orthodontic Department.

With the biomechanical orthodontic education and her unstoppable thirst for more knowledge, every year she has

taken 50-plus hours of continuing education to build on top of her formal training. The first 10 years, she practiced using the standard twin brackets and all the auxiliary appliances that are needed in conjunction with braces to accomplish the treatment outcomes desired.

It was the delightful few days she spent at Dr. Damon's (the creator of Damon Braces) office that changed her career from there on. She felt re-energized and very excited to deliver a type of treatment to her patients that could be effective, comfortable, faster, and consistently produce superior outcomes. Even better was that all those qualities allowed her to treat her patients with the same philosophy she had been treating them with before.

Her philosophy has been to create beautiful, natural, wide smiles and balanced faces without extraction, if at all possible. What was so refreshing was that she could do away with all the "torture" devices that she routinely used in the past. She tossed them all out the window! Those torture devices included: Palatal expanders, lingual arches, headgears, lip-bumpers and molar-distalizers (devices that push teeth in the back of the mouth further back).

She spent three days at Dr. Damon's office for training on this new technique, which is formally called self-ligating braces. Some may think braces are braces. That is true to some extent, but unique qualities of self-ligating braces require a completely different viewpoint on treatment and treatment planning. Treatments which without a doubt would need extractions or surgery no longer require that. That planning would require some additional knowledge and forethought with

this system of braces. She has heard or seen many orthodontists complain about or fail at using self-ligating braces – they use them as if the braces are just another bracket (brace). Training and additional courses that she has taken are essential to successfully using this system.

So that’s the story of how Dr. Alborzi fell in love with self-ligating brackets!

MALOCCLUSION – AND WHY TREAT IT?

Perfect teeth are straight, fit together perfectly, and don’t overlap. Unfortunately, only 30 percent of the population enjoys this type of bite.

Malocclusion is defined as improper fitting of the teeth together. Teeth can fit poorly in many dimensions: front-to-back or side-to-side. They can be crowded. They can protrude and retrude or have no overlap. All these malocclusions have names. Here are the definitions.

Different types of malocclusion are classified as follows:

1. **Class I** is actually when the bite fits properly front-to-back, however if teeth are crowded or spaced, it is considered a Class I malocclusion.
2. **Class II** is when upper teeth are positioned ahead of the bottom teeth.
3. **Class III** is when bottom teeth are positioned ahead of the upper teeth.

All these classes of malocclusion can have additional problems such as crowding, open bite, deep bite, protrusion etc.

Open bite is when the top teeth don't overlap the bottom teeth, when you have this problem it is hard to get the lettuce out of your sandwich. Individuals who have this problem usually demonstrate excessive wear on their back teeth. Back teeth suffer fractures and end up needing crowns.

Deep bite is when the top and bottom teeth overlap too much. Individuals who have this problem usually demonstrate excessive wear of their front teeth, and this is visible as shortening of teeth.

The above classification is a brief overview of problems which may exist in your mouth. There are a myriad of things that may present in the mouth that may additionally complicate a bite. Periodontal problems, jaw-growth discrepancies, cross-bites, and tooth-size variations are a few of these problems.

You may ask, why does a malocclusion (bite problem) require orthodontic treatment?

If you have a normal bite, teeth “interdigitate” (which means the teeth interlock like the fingers of two clasped hands) properly during function. This proper function reduces untoward forces on the teeth which cause poor wear, fractures, gum recession, and even gum disease caused by heavy forces.

Here are some potential issues due to malocclusion:

CROWDING: Plaque and tartar buildup harbor harmful periodontal bacteria that increase risk of periodontal disease (gum disease), tooth and bone loss.

SPACING: Food lodges between your teeth, which causes sore, tender gums and increases risk of periodontal disease.

DEEP BITE: Lower teeth over-erupt and can damage the palate. This leads to premature wear and chipping of the front teeth.

CROSS-BITE: Premature tooth wear and risk of chipped teeth. It can cause abfraction, which is a small notch in the tooth at the gum line. Due to untoward forces on the teeth, periodontal disease, tooth, and bone loss may occur.

EXCESSIVE OVERJET: Chipped or fractured front teeth during function. It can increase chance of trauma to front teeth that may even cause tooth loss.

EDGE-TO EDGE BITE: Increased risk of teeth chipping and breaking, jaw-joint pain, chipped and worn-down front teeth.

OPEN BITE: Abfraction, which is a small notch in the tooth at the gum line. Gum recession, loose teeth, and bone loss can occur. Excessive, premature wear on back teeth is seen.

Has Dr. Alborzi given you enough reasons to straighten your teeth?

Malocclusion is a potential health risk. If left untreated, malocclusion can lead to periodontal disease. Periodontal disease has been found to increase risk of atherosclerotic cardiovascular disease (hardening of the arteries).

In addition, malocclusion causes premature wear of teeth, and over time this can worsen and even result in tooth loss.

SELF-LIGATING VS. OTHER TECHNIQUES

You as a consumer may think braces are braces! They are those metal or clear things put on teeth to make teeth straight.

Not all braces or techniques in orthodontics are the same. They practically all have advantages and disadvantages over each other. When an orthodontist gets trained, he or she may be trained in one technique or multiple techniques during his or her residency programs. Most of us as we practice we find what works best for us and matches our vision of how we would like our patients to be treated and what their treatment outcomes will be.

Types of Braces:

1. Metal Braces / Traditional Braces

When one mentions braces, usually this is the type of braces that come to mind. You see them as just plain silver or decorated with colorful rubber ties. They are also called twin brackets because they have two wings and the rubber tie holds the wire in place and allows the wire to move the tooth.

2. Clear / Ceramic Braces

This is the same as the above metal braces, except that they are clear and better for those who do not wish to advertise their braces very loudly! Most adults choose this type as it is less conspicuous. They tend to be bulkier than metal braces as it is a more fragile material therefore the additional bulk adds to its strength.

3. Self-Ligating Braces

This type of braces are designed as if there is a tube to put the wire through. However, instead of rubber bands to hold the wire in place, an adjustable gate allows wire to be held in place. This adjustable gate is the key to many advantages this type of brace has.

4. Lingual Braces

Lingual braces are totally invisible, unless you open your mouth real big. The braces are placed on the back of the teeth instead of the front. It is quite technique-sensitive and is not very commonly used. They can be irritating to the tongue, and they have many limitations.

WHY RECOMMEND SELF-LIGATING BRACES OVER OTHER TYPES?

Because of the unique qualities of this type of braces, Dr. Alborzi can treat patients more often without extractions, surgeries, and additional unwanted and invasive appliances. But more importantly, she can create amazing smiles which cannot be created without extractions. She likes to know that the faces of her patients stay young as long as possible, and she didn't cause their faces to age faster. She loves to see her patients go through the experience of treatment without much discomfort or too much investment of time out of their busy lives.

Dr. Alborzi personally uses a type of self-ligating braces called Damon Braces. It was Dr. Damon who actually put the word self-ligating back into use by his pursuit of excellence

in this type of treatment mechanism. The type of self-ligating brace that Dr. Alborzi uses is called passive self-ligating, which compared to the active self-ligating has a spring that is activated and pushes on the wire – and that spring increases the pressure on the wire.

The main difference between all these types of braces is the amount of force they put on the tooth. The passive self-ligating braces generate 600x less force compared to traditional braces. The active self-ligating braces generate 300x less force. The lower force allows the blood vessels around the teeth to not get shut off and therefore a more healthy process of bone turnover occurs.

The lower the forces, the healthier the bone turnover, and therefore teeth typically move much faster and gentler. Lighter forces allow the bone to be oxygenated by blood vessels around the teeth – this helps the teeth and bone move together where we didn't believe they could move. It also reduces the damage to the roots of the teeth (AKA root resorption).

The questions are:

Would I want to have root resorption?

Would I want to experience 10x more discomfort?

Would I want to go to the orthodontist every four to six weeks?

Would I want to look older 20 years down the line because I had teeth pulled?

Would I want to have extra pieces of metal in my mouth?

Would I want to wear headgear?

Would I want to have four teeth pulled?

Would I want to have surgery if I didn't have to?

Dr. Alborzi's answer to all-of-the-above questions is a resounding NO!

It is true that sometimes she still has to recommend surgery or extraction of teeth. When she plans and diagnoses treatment for her patients, she has their facial esthetics in mind as well as a beautiful smile.

There are times that if she makes adequate room for all the teeth (which she is able to do most of the time), the facial balance of the patient will be poorly effected. Therefore, the facial beauty and harmony is the determining factor on these more extreme options of treatment – extraction and surgery.

AMAZING EXPERIENCES AND OUTCOMES

When Dr. Alborzi trained and started practicing orthodontics, the only tool she had was the standard twin braces with the beautiful color ties!

She had resorted to accepting that type of brace as the way to treat patients and even taught it to her students for 10 years. After all, she was trained at the University of Connecticut, and they were the experts in bio-mechanics. She could move teeth anywhere – and she really could.

Moving teeth was not any problem. However, she was not happy with what it took to get her patients the amazing outcomes that she wanted them to have. The missing ingredient was their experiences while going through treatment with respect to discomfort, not having to extract their teeth, facial harmony, and time out of their lives.

In 2002, she started using the Damon System. A new era of orthodontics had begun for Dr. Alborzi. She didn't have

to put her patients through unnecessary discomfort associated with high forces, uncomfortable auxiliary appliances like headgear, and she could achieve amazing and consistent results. Patients no longer had to routinely get expanders or extractions of teeth. Surgery was not the only option for some of them. She was elated and remained that way.

Additionally, she found her patients, many of them who were adults, too busy with work and family. School-age kids didn't want to miss so much time out of school, or the schools didn't want them out for appointments. Being part of an athletic team made it even more difficult for kids to come to their visits every four to six weeks, as their coaches wouldn't allow that absence. Good news is with the self-ligating braces, patients don't have to come to the office more than every eight to 10 weeks at a time.

Today, we all face even more challenges with time! Dr. Alborzi overcame all the challenges relate to time by using the self-ligating system. At their **first appointments** patients will get all of their braces and without any need to come in a week prior to get separators to make room for rings (bands) on their teeth. Everything gets bonded to teeth, simply and comfortably. Then patients return 10 weeks later.

It happened that as Dr. Alborzi wrote this chapter, she consulted with a young patient who was told he needed expanders, and a myriad of other treatments. She told the parents that how she was going to treat their son might sound very simplistic compared to what they had heard so far. However, that is the beauty of what she can do with the Damon braces – she can give their son a great outcome without putting

him through unnecessary discomfort and procedures.

She should also mention here that she has never received any calls from anyone complaining about a discomfort that they can't handle – this is not an exaggeration! This situation is quite different from most of her experiences with standard braces.

SELF-LIGATING BRACES: FROM THE FIRST TO THE LAST APPOINTMENT

First Appointment

When you arrive for your first appointment, the most important information is your chief complaint. Dr. Alborzi likes to know what is not optimal and what is really concerning you. She makes sure she addresses this concern.

At the initial appointment, she likes to take a panoramic radiograph. In a child, this X-ray shows the general pattern of dental development, where the developing permanent teeth are located, and how they are erupting. Teeth can develop in unusual locations and grow in unintended directions compared to normal growth. A panoramic X-ray can also show if there is adequate space for all permanent teeth waiting to erupt.

In an adult, a panoramic X-ray, shows the level of bone around the teeth, the roots of the teeth, and areas of the jaw beyond the roots. She additionally evaluates the shape of the Temporo-mandibular Jaw Joint (TMJ) for any anomalies. It is important to see a big picture of the jaws, since tooth movement is not limited to only moving the crowns of the teeth. We are moving the crown *and* roots. If this type of X-ray

is not taken, there are occasionally pathologies that would be missed.

The next important diagnostic tool she uses are the photographs of the face. In addition to the photographs, she performs a thorough examination of the teeth and face.

All of the above data, allows Dr. Alborzi to make a final or preliminary diagnosis depending on the complexity of the problem. Additional records needed after the initial examination are a cephalometric X-ray, which is a measurement of the head, from a profile view and molds of the teeth. With the above data, she can determine your needs with respect to your chief complaint and her findings. Diagnosis is the same irrespective of what type of treatment modality. However, when it comes to the ability to achieve certain outcomes, it is important to use the right tool.

TREATMENT PLAN

Once she determines your needs by assessing all the diagnostic information then she sets out and plans your treatment steps. This step determines where your brackets should be placed, and even details what angulations (the action of making angular) within the bracket is needed to give you the fastest and best outcome. This is done with Dr. Alborzi in front of the computer and assessing all the gathered information. You can call it homework!

BONDING DAY

This is an exciting day for most patients. It is exciting for kids because they have always wanted braces. It is exciting

for adults because they are finally doing what they had put off for a long time or they look forward to the day their braces will come off.

To place your braces your lips and cheeks must not touch the teeth. To do that we place a soft cheek retractor, and it makes your mouth look like a fish. Your teeth are then polished and prepared for bonding. Dr. Alborzi places a special sealant over your teeth to prevent cavities. Then the doctor places your braces using a direct technique of one by one. There is an indirect way of doing this in which the braces are first placed on a mold then delivered as a group onto your teeth. They both deliver the same outcome at the end. The bracket placement takes about 10 to 15 minutes. The cement that glues the braces to your teeth is cured with a blue light and then wires are placed.

The wires that are placed are space-age wires developed originally by NASA. They have a memory quality that prevents them from taking a permanent deformation (the action of changing shape or distorting, especially through pressure). This quality allows these wires to put the least amount of pressure on your teeth and keep doing that for 10 weeks. They are part and parcel to the delivery of low forces with self-ligating braces.

At this first appointment we sometimes may ask you to wear some rubber bands that hook your top teeth to the bottom teeth in certain patterns. These allow the teeth to move more in one segment than the other. For example, if the front teeth stick out too far, they can put more pressure on those front teeth and help them to retract to the ideal position.

Once the wires are placed, we give you instructions as to how to care for your braces and what to expect.

HOW TO TAKE CARE OF YOUR BRACES

At your initial appointment we will review general care for your braces.

- You will be given a list of hard foods to avoid or watch for.
- You will be instructed how to brush and floss.
- Various tools such as an inter-proximal toothbrush, dental wax, floss threader, etc., will be given to assist you in better care of your teeth.
- Brushing time has to increase to five minutes to really clean around the brackets, gum line, under the wires and tops and insides of the teeth.
- Flossing is more difficult, and a floss threader or something like *Supper Floss™* can be used.
- Dr. Alborzi also recommends water-picks such as the ones from Waterpik or Sonicare.

Kids usually give up all together on flossing because it is much harder. Dr. Alborzi asks them to floss top teeth one night and bottom teeth the next night to make it more manageable.

THE FIRST WEEK

This is the week that everyone has to be patient in order to get used to their braces. New sensations are experienced in the mouth. The lips function against the braces and initially effect speech, and braces rub against cheeks.

Dr. Alborzi recommends salt-water rinses starting a week prior to placement of braces in order to toughen and make tissues of the mouth ready for this new experience. It definitely makes it easier.

If an area is getting sore due to too much rubbing,

patients are given wax to cover up brackets or areas that rub.

The first week, she also suggests using a manual toothbrush as the mechanical ones won't feel very good against sensitive teeth.

The word "sore" just got mentioned? Yes, when teeth move, you will experience soreness of teeth when you try to eat, especially the first three days. Plan ahead and make shakes and soups the first three days. Some individuals may take up to five days, but that is rare.

This is where the self-ligating braces are amazing – there is so little discomfort. But if you've never had braces before it still is not be a lot of fun to have sore teeth. Most people don't need any medication to help with the discomfort they experience. Dr. Alborzi wore Damon braces about four years ago, and she can confidently confirm this.

ADJUSTMENT APPOINTMENTS

Every eight to 10 weeks you arrive for adjustments. The main purpose of an adjustment visit is to move teeth further toward their ideal position. The main procedure during adjustment is a wire change. As we make wires larger and stiffer, the brackets move the teeth to the expected position. Adjustment appointments may also include changing of bracket position on a tooth. Sometimes teeth are so crooked that it is not possible to originally place brackets in the best position.

The adjustment appointment will again cause your teeth to get sore, sometimes not as much as the first appointment. You can use the bite wafer to chew on to help alleviate the discomfort more quickly. Devices like AcceleDent (an orthodontic brand

name device) that help speed treatment also reduce discomfort.

Most orthodontic treatments require elastic wear. These rubber bands provide additional directional pressure to help move teeth. At adjustment appointment, we check to see how you are doing with our instructions for elastic wear. Dr. Alborzi has to be honest: 80 percent of patients do not follow instructions as they are supposed to do. This only results in added cost and time to their treatments. Following elastic instructions well is the best way you can ensure timely removal of your braces.

You may need to come for a visit in-between your adjustment appointments. Usually these visits are due to teeth straightening and causing wires to poke out. Sometimes, eating foods that are a bit harder may cause a bracket to break off as well. Eating with braces is a bit different than without. It's best to eat smaller morsels of food and position the food more on the inside of the mouth versus in the cheek area. Big chunks of food between cheek and braces can generate enough force to break the brackets – after all our jaws can produce as high as 1,400 Newtons of bite force.

Working together as a team with the orthodontist is the sure way to complete your treatment in a timely manner. Keeping appointments is crucial as well. One missed appointment can set you back for weeks.

After all this a beautiful healthy smile awaits you!

A HEALTHY, BEAUTIFUL SMILE AWAITS YOU!

Anywhere from 10-28 months is the average time treatments may range. The day the braces are removed is the most joyous day, and we do celebrate it with you.

Removing braces is mostly mechanical. The braces

get taken off by putting a certain pressure on them that causes deformation that pulls them off the glue. Once braces are off, there is residual glue on your teeth. The residual glue is polished off, leaving teeth smooth and beautiful.

Most individuals don't find this process uncomfortable. There are the rare few, especially those who always clench their teeth and already have sensitive teeth, who don't find this an easy process. However, we have our ways to make you as comfortable as possible.

If you have done a great job with your dental hygiene, your smile will look amazing right away. If your gums are swollen, it will take a few weeks before your smile becomes amazing. Dr. Alborzi recommends getting your cleaning and checkup after a month so your gums can improve, and the dentist can do a better job cleaning and examining your teeth.

When teeth have been crooked for a long time, there could have been poor wear patterns on the teeth, and straightening them is not enough to create a perfect smile. This is when additional dental restorations such as crowns and veneers maybe indicated (See below).



Other time, the gum coverage on the teeth has up and down levels or there is too much gum over the teeth hiding its full length. In these cases, we can do what is called a gingivectomy (trimming of gum), which uses a dental laser. This procedure is relatively simple. The level of discomfort may be as much as a pizza burn.

If you have missing teeth or restorations that need changing, now is the time. Implants (false teeth) are also placed when orthodontic treatment is complete.

Important Note: Never have a dental implant placed if you are considering orthodontic treatment. An implant is solidly fixed in the jaw bone and cannot be moved.

WHAT WILL KEEP YOUR TEETH STRAIGHT AFTER BRACES?

As our bodies are constantly changing, so will our teeth change as time passes. Teeth are constantly on the move because of muscles of the tongue and face and chewing forces. Teeth also have a tendency to move back toward their original positions.

Dr. Alborzi asks her patients, “If there was something that would keep their faces from getting old would they wear it every night?” The answer is a resounding yes.

Retainers are the devices that keep your teeth from “wrinkling”. Once your braces are removed, new molds are taken and retainers will be made from them.

She recommends wearing retainers only at night time. Over the past 20 years, she has found that about eight hours is sufficient time to keep her patients’ teeth straight, and about two percent will need to wear their retainers initially more than that.

Occasionally some teeth like to move during the day hours when the retainer is not worn. In those rare cases, we place a bonded retainer on the insides of the teeth to keep them fastened.

It is best to keep retainer wear as a part of your routine for life – that is, only if you'd like to keep your investment of a beautiful smile for a lifetime.

Just like shoes, retainers do wear out. Dr. Alborzi recommends a new set of retainers every two to five years, depending on how hard you are on them.

Retainers are made after the braces are removed or sometimes just one visit prior to removal. Molds (copies of your teeth) are taken or a digital scan can be done to create a copy of your teeth. From that copy retainers are made.

There are several types of retainers. There is the old-fashioned Hawley retainers that are a combination of wires and acrylic. This type of retainer works excellent as long as you are very good about wearing them. Once your teeth move, due to its rigidity, it doesn't easily push your teeth back to the original straight position. That's why Dr. Alborzi prefers the Essix type of retainers that look like an aligner. These hold your teeth straight really well but are more fragile and need to be replaced every two to five years. Another great thing about them is that they protect your teeth from bruxism (grinding of teeth during sleep).

Keep your investment by wearing your retainers!

What do patients say about their experience:

MY TEETH ARE PERFECT!

“Before coming to Dr. Alborzi, I went to two other orthodontists. One told me she could not work on my teeth because my case was too ‘complicated’. The other orthodontist told me if I wanted to have perfect teeth I would need jaw-surgery or if I opted not to do that I would need extractions but my overbite would never fully close.

“With Dr. Alborzi, I didn’t need jaw surgery or extractions. And my teeth are perfect!

“I can’t put into words how happy I am with my new smile! It truly has changed my life, and I feel like a new, more confident person.

“Dr. Alborzi uses the Damon System which allowed my teeth to become straight and perfect without surgery or extractions. The other orthodontists used older, traditional braces. I am so grateful to have found Dr. Alborzi. She and her entire staff have made a huge impact on my life. They are the nicest people and have treated me so well over the past two years of my treatment.

“So thank you Dr. Alborzi and every single person at Alborzi Orthodontics for giving me the opportunity to have a beautiful smile and the confidence I longed for! I didn’t need jaw surgery or extractions. And my teeth are perfect!” — RR

THE DAMON BRACES WORKED PERFECTLY!

“My two daughters and I are all patients of Dr. Alborzi. We had heard great things about Damon Braces, and she was the

only orthodontist in our area to use this most recent technology.

“After meeting with her, we were thrilled to find out that my daughter, who had a cross-bite, overbite and crooked teeth, would be able to go without the terrible metal expander in her palette. The Damon braces worked beautifully and she had a whole new smile in less than one year. It was easy and painless.

“The office staff is upbeat, friendly and very organized. The facility is extremely clean. We highly recommend Dr. Alborzi for your orthodontic needs.” — KC

VERY PLEASED WITH THE RESULTS

“I have been very pleased with the results provided by Dr. Alborzi. She is a master of producing a wonderful arch form with the teeth nicely in alignment. She makes the smile fit the face.

“Other practitioners routinely leave anterior open bites in order to finish their cases earlier or do not include second molars, which come erupt and introduce occlusal disharmony. I believe that Dr. Alborzi routinely finishes cases as well as they can be done, and that is saying a lot.” — RO, Local General Dentist

Open Bite



Spacing



Crowding



Deep Overbite



Excess Overjet



Underbite



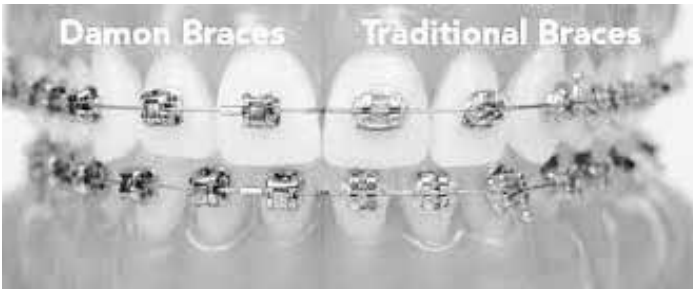
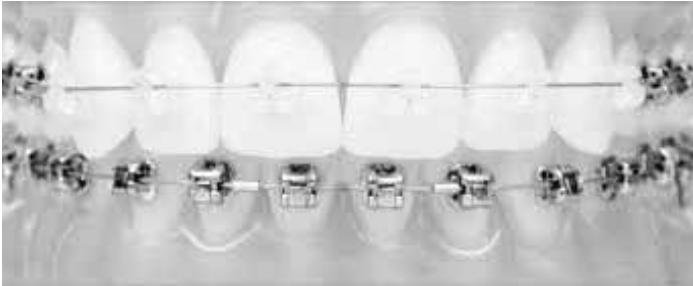
Crowding



After Alignment needing restorative work



Clear Damon Braces



Hawley Retainer



Clear Essix Type Retainer

