

The impact of Phase 1 and Phase 2 treatments with Invisalign aligners¹ to my practice: Our initial lessons learned



Dr. Mark Garlington (Long Beach, USA)

Dr. Mark Garlington is a board-certified orthodontist in solo practice in Long Beach, CA. He has a Bachelor's Degree in biology from UCLA and received both his DDS and his orthodontic specialty training from the University of Southern California. Dr. Garlington is a member of the Angle Society and the AAO. He and his wife are involved with several community programs in Long Beach, including the YMCA, BLAST, LBCC Foundation, Rotary, and Rancho Los Amigos Hospital. Dr. Garlington was one of only twenty doctors in North America invited to participate in the Invisalign First limited market release and has started over 200 Invisalign First cases since then. Dr. Garlington is currently a Diamond Plus level Invisalign provider. At the most recent Invisalign Virtual Summit in November 2020, Dr. Garlington discussed how to generate patient excitement and engagement with young patients using Invisalign Stickable™.

Executive summary:

2-phase Invisalign treatment and lessons learned:

1. We use Invisalign First aligners for Phase 1 interceptive treatment **to keep obvious problems from getting worse**, and this makes the patient's Phase 2 treatment much more straightforward, by not having to undo the dental compensations that would otherwise occur without any intervention.
2. By minimizing the need for multiple appliances during Phase 1 treatment, Invisalign First treatment is **more convenient** for the patient and the practice, while also helping us **grow the practice**.
3. **Periodic monitoring of patients** in retention after Phase 1 is important to avoid relapse during the interim period, since a 1- to 2-year gap between Phase 1 and Phase 2 is not uncommon.
4. **Remote care tools** such as **Invisalign Virtual Care** can help you monitor your patients between visits during the retention period without increasing your chair time.
5. Our **younger patients are highly compliant**², and even those who have had a less-than-ideal Phase 1 experience with clear aligners may still prefer Invisalign aligners over regular braces once they are ready to begin Phase 2. Fixed appliances are always a back-up option, but don't assume that these are what the patient wants.
6. The introduction of **Invisalign Stickables** in our office has **practically eliminated patients asking for traditional fixed appliances**, because younger patients can now customize their Invisalign aligners just as they would decorate their braces with "colors."
7. Once Phase 2 treatment is completed, our go to retention solution is Vivera® retainers.

Strategies for driving more multi-phase treatments with Invisalign clear aligners:

1. **Define your specific goals** of Phase 1 treatment and then educate the parents and patients about why correcting these problems early is best, and why Invisalign aligners are an excellent choice for achieving these goals.
2. Make a **confident recommendation for Invisalign First™ aligners** being the treatment of choice for their child when appropriate. Introduce them to the world of "**digital orthodontics**" by letting them experience for themselves the advantages and convenience of digital technology, including **iTero™ intraoral scans, Invisalign Virtual Appointments and Invisalign Virtual Care**.
3. Showing **case examples** to parents is probably the best way to demonstrate how effective and efficient treatment with Invisalign First aligners can be. We use a case gallery book of common orthodontic problems treated by us with Invisalign First aligners.

¹ For Phase 1 treatment, Invisalign First Comprehensive Package was used. For Phase 2 treatment, Invisalign Comprehensive Phase 2 Package was used.

² 87% of Invisalign orthodontists agree that their young patients are highly compliant with Invisalign First treatment. Based on the global limited market release (LMR), which included NA, EMEA and APAC regions, 54 Invisalign orthodontists and a total enrollment of 784 patients. 31 of the 54 Invisalign orthodontists in the LMR responded to the question: "My young patients (typically 6-10 years old) are highly compliant with Invisalign First aligner treatment." Agreement scale is 1-4 with 1 being "strongly disagree" and 4 being "strongly agree".

Introduction

Align Technology, Inc. had the opportunity to interview Dr. Mark Garlington from Long Beach, California (www.drq4smiles.com) about his recent experiences with Phase 1 and Phase 2 orthodontic treatment using Invisalign clear aligners, and we are excited to share his clinical insights and current key takeaways with you.

Why do you choose Invisalign First and Invisalign Comprehensive Phase 2 aligner products for 2-phase treatment vs. a singular Invisalign Comprehensive aligner product?

When we evaluate our patients at the age of seven³ during their initial orthodontic evaluation, we can pretty much determine which of our patients should go through 2-phase treatment based on the malocclusion presented. We start treating the younger patients who need to be treated right away with Invisalign First aligners because if we make these patients wait until they are teenagers, we are missing a big window of opportunity to help develop their arches early, and early arch development usually makes additional treatment needed at a later age easier.

The Invisalign First product (which covers up to 18 months of treatment duration) plus the Invisalign First Comprehensive Phase 2 product (which covers up to 3 years of treatment duration) gives me the flexibility to complete Phase 1 treatment, retain, and start Phase 2 treatment without being limited to the 5-year additional aligner policy of the Invisalign Comprehensive product. This lets me complete Phase 1 treatment and allow for the permanent teeth to come in before starting Phase 2, when the additional aligner policy for the Phase 2 product renews. Typically, Phase 2 treatments are less complex when the core issues are intercepted during Phase 1 treatment, so the 3-year treatment expiration time window of the Phase 2 product is sufficient to complete the case.

Invisalign First aligners also have unique features designed specifically for Phase 1 treatment needs which are not available in the Invisalign Comprehensive product. These features include two types of staging patterns (i.e., molars move first and simultaneous), specialized expansion support and optimized retention attachments, as well as a specific eruption compensation feature for permanent incisors.

What is your general Phase 1 and Phase 2 clinical strategy?

Our treatment philosophy for deciding whether early treatment is recommended is mostly based on whether we can intercept a problem that we see already forming, in order to keep the problem from getting worse later. Some orthodontic problems are relatively straightforward to address if dealt with early, but they become much more complicated to treat if left until the patient is a teen or an adult. For example, the arch width can be expanded easily while the patient is still young, so we will routinely program arch development into our Invisalign First aligners, but if this condition is treated later, correcting the transverse dimension might require a surgical step first. Even for severe maxillary constrictions, we will still use Invisalign First aligners, but in conjunction with a rapid palatal expander as a hybrid approach for Phase 1.

Crowding from premature loss of primary teeth is another example where early treatment might allow the permanent teeth to erupt into the correct position on their own, but if treated later when the roots have fully developed, might require extractions in order to create space. We will use Invisalign First aligners to undo the effects of mesial drift, and also consolidate or create spaces for teeth that might otherwise have difficulty erupting into the proper place.

Phase 1 treatment can therefore greatly reduce the amount of treatment effort needed in Phase 2 and help us avoid surgical interventions like bicuspid extraction and palatal expansion surgery. With early treatment, we can also guide the growth direction during jaw development, if there is a discrepancy between the upper and lower jaw length. Doing this efficiently requires that we treat the patient while the jaws are growing, instead of after they are done growing.

We also recommend early treatment to prevent other problems from occurring, such as potential trauma to the front teeth if dental protrusion is present. We can also create better smile esthetics for improved self-esteem. We explain to the parents that not every child needs 2-phase treatment, but those who do can benefit greatly from orthodontic treatment at an earlier age.

How do you avoid treatment fatigue during Phase 1? In other words, when is the patient's first phase of orthodontic treatment considered "done"?

We definitely want to stay focused on the main objectives of Phase 1 treatment and not lose sight of those goals. The reason we initiate Phase 1 is because a specific problem exists that is better to fix earlier rather than later. **We will specifically target crossbites, open bites, reversed bites, dental protrusion, lack of space for the permanent teeth (e.g., crowding and lack of arch length, especially from premature loss of primary teeth), and psycho-social concerns from an unesthetic smile.** We will stay focused on fixing these specific areas of concern as the goal for a successful first phase of orthodontic treatment, and defer anything else to later during the second phase of treatment. Finishing the alignment of the teeth and achieving a detailed final result is usually done during the second phase, and is best to accomplish after all the permanent teeth have erupted, for maximum efficiency.

Since we spend time to educate the parents on what to expect during Phase 1 treatment, everybody is on the same page, meaning, us with the patient and their parents. We are all clear about what success looks like, and nobody is disappointed if some things are left to be finished during the second phase. For example, we will typically build in spaces around the primary canines for the permanent canines to have a clear path for eruption (and the Invisalign lab technicians will do this as a default preference setting). If we don't explain this goal to the parents, some of them might think that the first phase is not yet completed because of the spaces present. Another example is if some of the permanent teeth erupt ectopically despite our space creation. For ectopic teeth, we need to wait until the permanent teeth are fully exposed so that more tooth structure is available to hold onto. In situations where the bite has not been fully corrected to a solid Class 1 during Phase 1, we will also wait until all the permanent teeth are fully in and resume treatment during Phase 2, rather than struggle with trying to get the appliances to fit over the erupting dentition.

³ https://www.aaoinfo.org/system/files/media/documents/Right_Time_for_Ortho-MLMS-hl.pdf

Ideally, if we can start the patient's first phase of treatment at around age 8 or 9, that's also when their permanent upper central incisors and permanent first molars have erupted enough where the aligners can stay on snugly. **We like to finish our Phase 1 treatments in 12 months or less.** After 12 months of Phase 1 treatment, the main problems we set out to correct should be completed or near completion. By keeping the first phase to around a year or less, the patient gets a bit of a break while the remaining permanent teeth come in. **A 1- to 2-year transition period between phases is fairly typical when we follow these guidelines.**

What is your protocol for the interim transition period between Phase 1 and Phase 2 Invisalign treatment, and when do you typically start Phase 2 treatment?

As the patient's primary teeth fall out, we will have them wear their Invisalign First aligners until they no longer fit over their erupting teeth. Then we will usually make them an upper Hawley retainer to be worn at night, and a lower clear Essix-type retainer, also to be worn at night. The upper appliance can be adjusted as the remaining permanent teeth erupt, but the lower stops being useful when the remaining teeth erupt. We used to have the patient stop wearing their lower clear retainer after their permanent lower canines erupted, but in some cases, we saw significant movement of the lower anterior teeth between Phase 1 and Phase 2. As a result, we have now started to place a lower lingual holding arch (LLHA) in the lower.

When do you typically start your Phase 2 treatments and what key clinical markers do you use?

I will usually try to wait until all the permanent bicuspid and canines have erupted before starting Phase 2, but sometimes we will start before the second molars have erupted in specific situations. We will start the second phase earlier if there are still space requirements. For example, if some teeth are erupting ectopically, we want to make room. We will also start earlier if we want to work on correcting the A-P relationship while the patient is going through their pubertal growth spurt.

During the transitional period between phases, we like to keep an eye on our Class 2 patients and monitor their growth, so that we can address the sagittal relationship sooner, and to try and avoid a prolonged Phase 2. **Now that Invisalign aligners have a mandibular advancement option with precision wings, we can address the sagittal relationship without relying as much on wear compliance with Class 2 elastics.** Cases with larger A-P corrections will of course take longer, but we generally like to finish our Phase 2 treatments in 12 months.

What is your retention protocol for after Phase 2 treatment?

After Phase 2 with Invisalign aligners, I will give the patient upper and lower Vivera® retainers. I love that there are 4 sets of retainers⁴ included in the product, so they really have no excuse for lost retainers! My Invisalign patients are also already accustomed to wearing a clear removable appliance, so compared to our patients treated with traditional braces, they are much more familiar with the routine of wearing a clear retainer afterwards.

Our protocol for wearing Vivera retainers post-Phase 2 is to have the

patient wear the first set for 6 months (full-time for 2 months and 12 hours/day for the next 4 months) and then switch to the second set and wear them only at night (during sleeping hours). The third and fourth sets are replacements and should also be worn only at night, until new ones need to be ordered after the fourth set⁵ is used. The beauty of digital dental technology is that if their teeth stay healthy and they are compliant with wearing their retainers, we can order additional retainers very easily using the previous intraoral scan, and they will fit just like the previous ones did.

Before we used to prescribe Vivera retainers routinely, I was almost always using a fixed lower 3-3 retainer and an upper Essix-type clear retainer. With my traditional braces patients, I was using a fixed lower 3-3 retainer and an upper Hawley retainer. During COVID-19, we have not been placing any fixed retainers at all. If Vivera retainers are not ordered, we will 3-D print a scan of the patient's final results and give them their own printed models to take home, which they can bring to us at any time to have a replacement clear retainer made for a nominal fee. By doing this, we are essentially giving them a discounted retainer fee in exchange for having them take greater ownership of preserving their treatment results.

What initial learnings can you share about your experience with the Invisalign Comprehensive Phase 2 Package that was used as part of a Phase 1/Phase 2 treatment plan?

When I first started treating teens with Invisalign a few years ago, it seemed like a natural transition for us to also offer Invisalign aligners to our Phase 2 treatment patients who were treated with wires and brackets during Phase 1. **Now I am finding that my Invisalign First patients don't even think about traditional braces for Phase 2 treatment. They just think it is natural for us to use Invisalign aligners for their Phase 2 treatment as well.** Only some of the parents of children who were not compliant with Invisalign First treatment ask for traditional braces for their child in Phase 2, and this is a very small percentage. Parents really appreciate the convenience associated with Invisalign aligner treatment, and the fact that there are no emergency appointments for broken brackets and poking wires. For us, this advantage plus the time savings in appointment scheduling has been a real boost to our practice efficiency and our bottom line.

Also, some of our younger patients used to insist on fixed appliances for their orthodontic treatment because they wanted to decorate their braces with colored O-rings. However, with the recent introduction of Invisalign Stickables in our practice, we almost never get a question about "colors" on braces anymore, and most of our patients who have tried the Invisalign Stickables product absolutely love it.

How do you manage concerns over treatment costs for two-phase orthodontic treatment?

The most common objections for two-phase treatment are usually the treatment duration and cost. Many parents incorrectly think that starting earlier means that their child will be in active treatment the entire time, and they also assume (also incorrectly) that aligner treatments cost more than fixed appliances.

Our job is to educate our parents on why two-phase treatment is better

^{4,5} US market configuration. Markets outside of the US have 3 sets of Vivera® retainers included in the purchase.

for some patients than a single-phase treatment later. For our younger patients with problems such as constricted arches, blocked-out permanent teeth, and dental protrusion, any objections from their parents are usually resolved by discussing the benefits of early treatment as mentioned before. We just have to be clear about the specific goals for each phase. When we explain our treatment philosophy for Phase 1/Phase 2 and the transitional period in-between, and that we actually charge more for fixed braces than for Invisalign treatments, the parents begin to realize that their assumptions aren't always correct. Also worth mentioning is that our Phase 1 treatment fee is now very similar to our Phase 2 treatment fee.

The other concern some parents have about Phase 1 treatment with

Invisalign aligners is whether their child will be compliant with wearing the appliances. We explain that our younger patients are actually our best patients, and that Invisalign appliances are actually much easier to care for than fixed braces. Other things we will mention are the differences in terms of oral hygiene and dietary restrictions, the treatment time and total number of appointments needed for adjustments, the ability to avoid extra appliances for A-P correction (by using precision wings with aligners), no emergency appointments with aligners for broken brackets, the high quality of our aligner treatment outcomes, and that aligners will actually be more gentle than fixed appliances. We also promote all of the advances made in the last few years with digital technology, starting with the iTero® scanner and with digital treatment planning, which allows us to create a truly customized and predictable appliance for their child.

What are some examples of a two-phase Invisalign treatment in your office that you can share?

The following two cases are fairly typical of my 2-phase Invisalign aligner treatments. Please note that both of these patients are still undergoing Phase 2 treatment, and the images that I have shared under "Phase 2" are progress photos.

Case 1—Anterior crossbite, upper and lower crowding, constricted arches, supernumerary tooth (mesiodens):

Initial records:

Age: 8 years, 10 months-old female

Chief concern(s): Her mom had orthodontic treatment as an adult and needed jaw surgery. She wanted to do everything possible to try to prevent the need for surgery for her daughter.



End of Phase 1 records*:

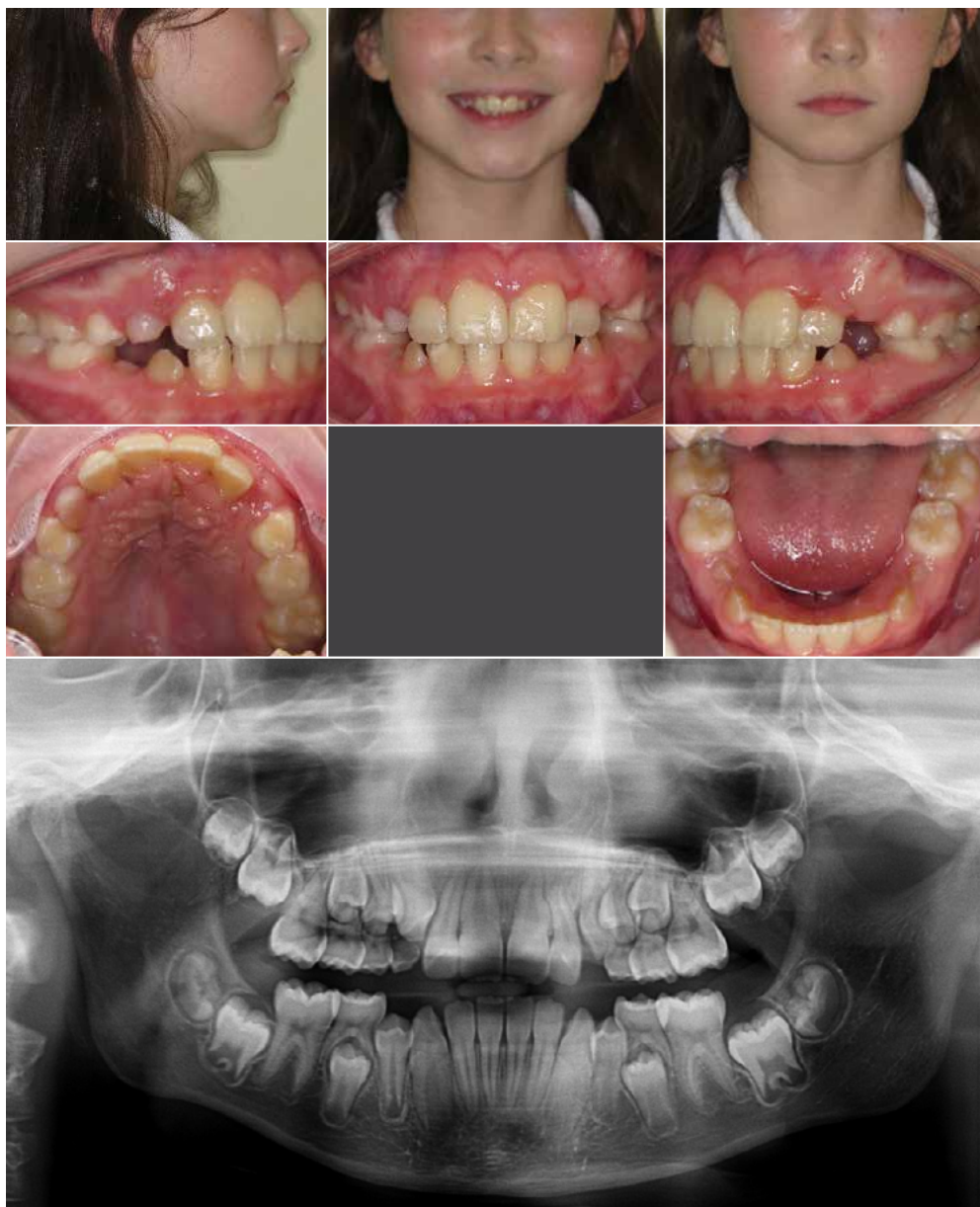
Age: 9 years, 8 months

Treatment length (Phase 1): 10 months

Number of aligners used:

Initial series: 40 aligners in the upper arch and 19 aligners in the lower arch (7-day changes for the first 4 aligner sets, and 5-day changes after that; 1 Additional Aligners order of 15 aligners in each arch (5-day aligner changes⁶).

Auxiliaries used (if any): None



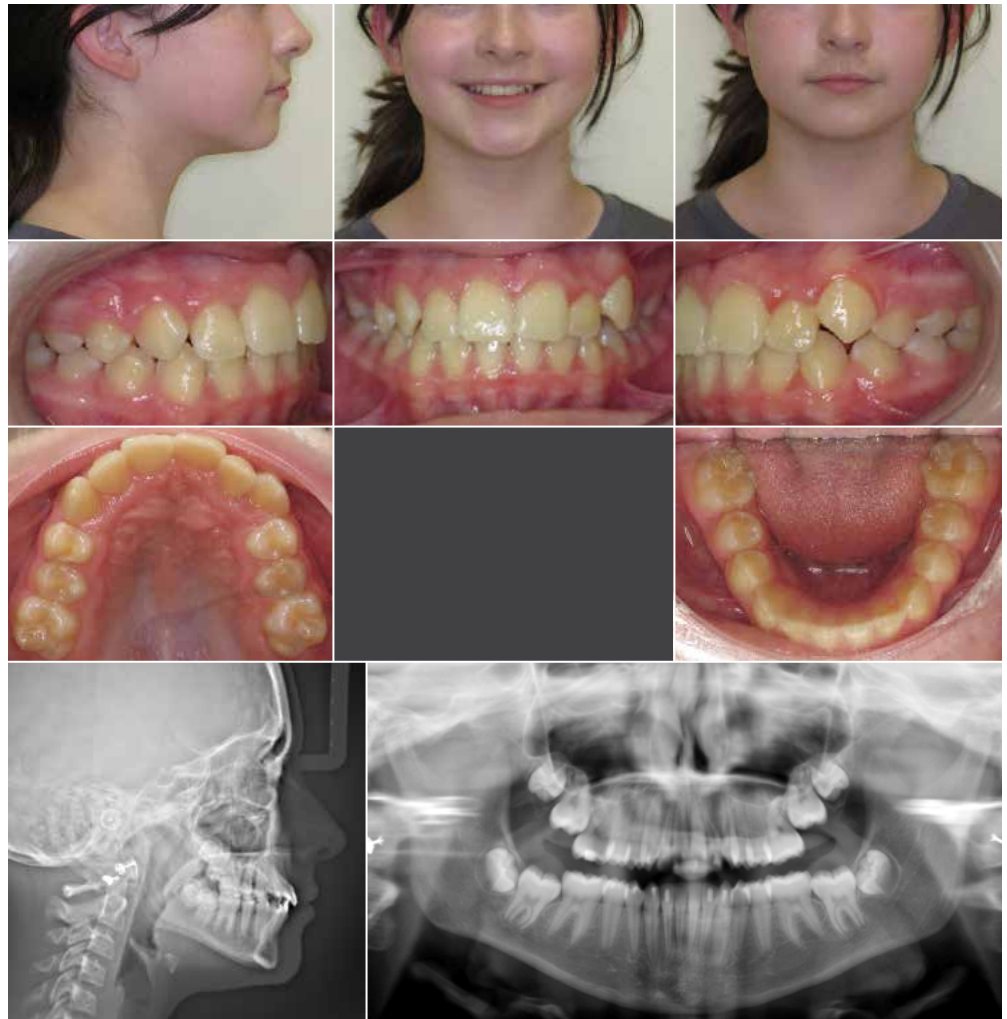
*Records were taken immediately after the removal of the supernumerary tooth (mesiodens).

⁶ Each set of aligners is designed to be replaced after 1-2 weeks of 20-22 hours of wear per day, or at the doctor's discretion.

Start of Phase 2 records:

Age: 11 years, 7 months

Transitional period (months): 23 months



Phase 2 progress records:

Age: 11 years, 10 months

Treatment time: 8 weeks into Phase 2

Number of aligners in the approved set-up:

19 aligners in each arch
(7-day aligner changes)

Auxiliaries planned/used (if any):

None planned

Plan for remaining treatment: We will order Additional Aligners as needed for detailing, and we will need to monitor the eruption of the second molars.

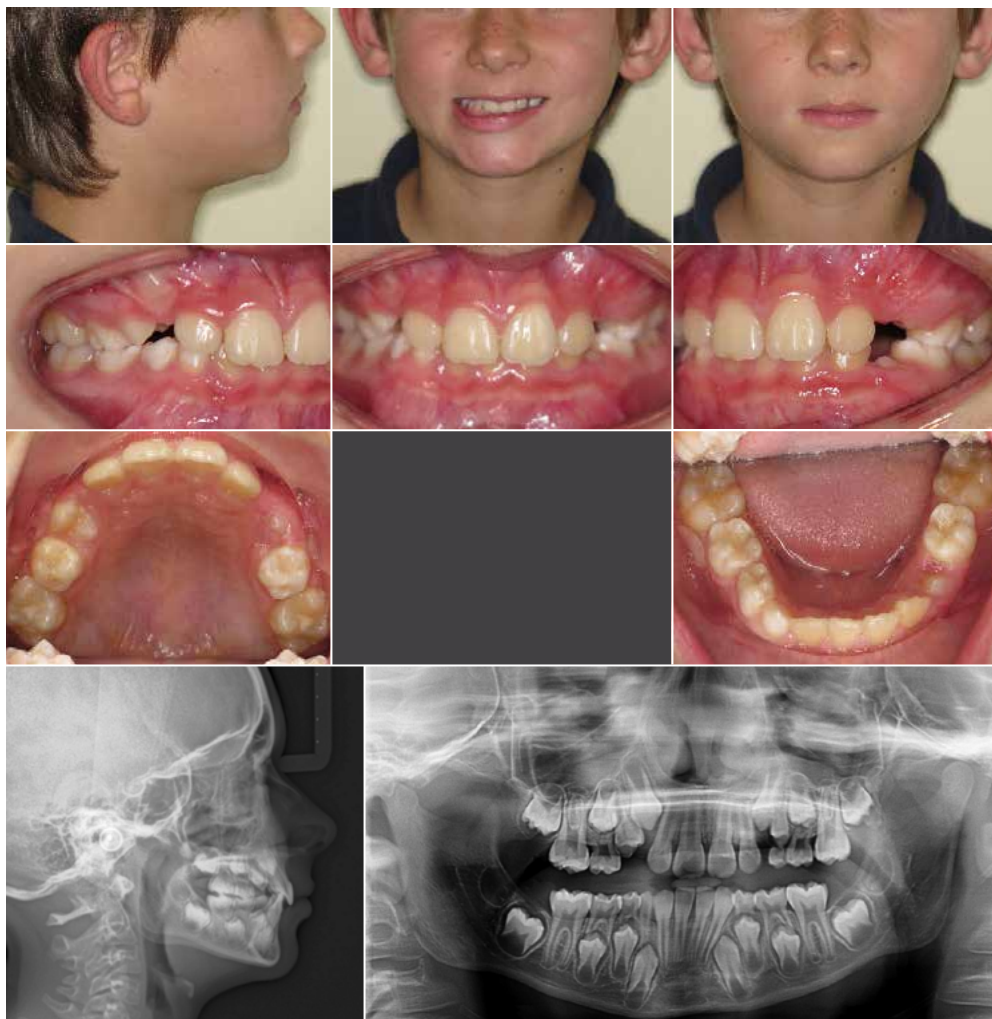


Case 2—Deep bite, inadequate space for the permanent canines:

Initial records:

Age: 8 years, 0 months-old male

Chief concern(s): Narrow arches, deep overbite, lack of arch length, early loss of the primary lower left canine, impacted permanent lower left canine, and lack of space for the permanent upper canines.



End of Phase 1 records:

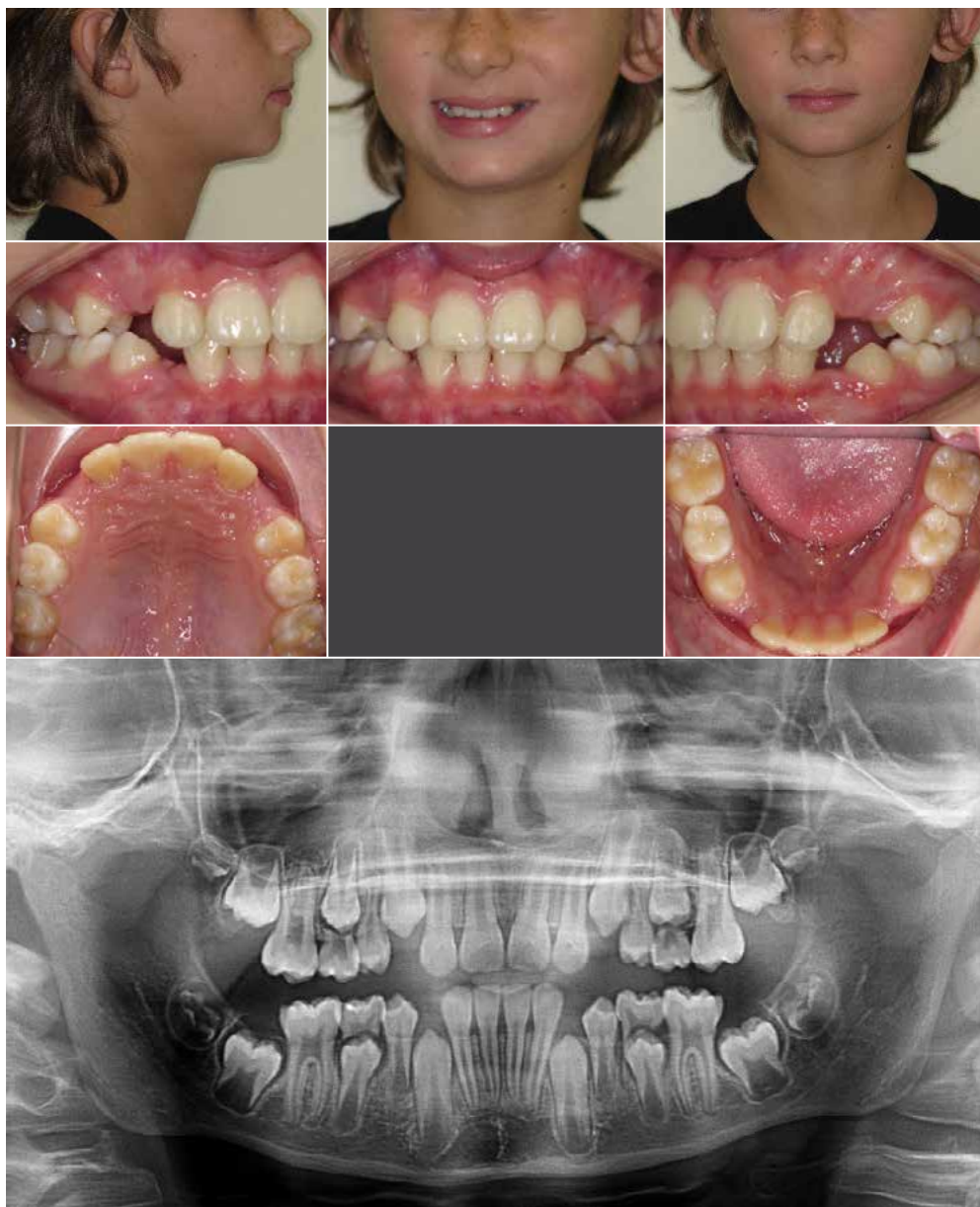
Age: 8 years, 8 months

Treatment length (Phase 1): 8 months

Number of aligners used:

31 aligners in each arch; No Additional Aligner orders (5-7 day aligner changes).

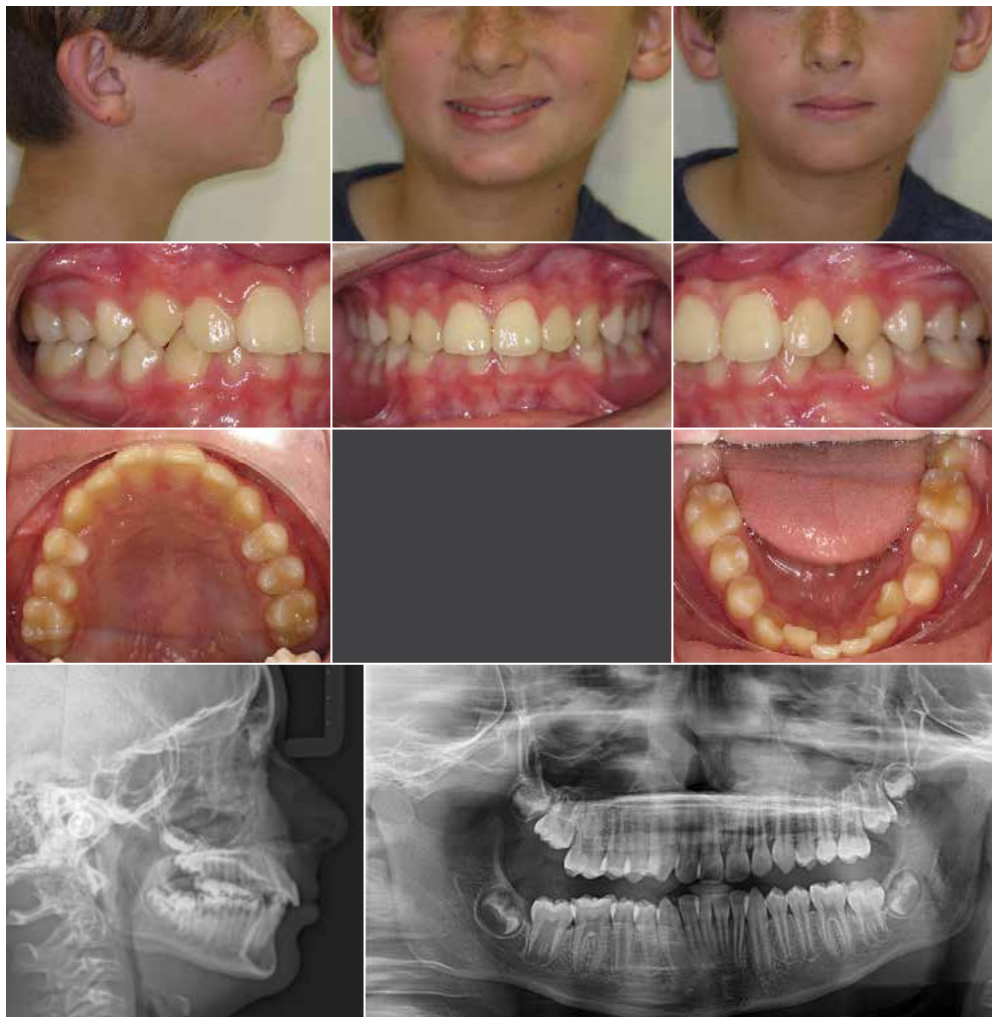
Auxiliaries used (if any): None



Start of Phase 2 records:

Age: 10 years, 6 months

Transitional period: 22 months
(Note: The patient broke and lost his retainers during the COVID-19 shutdown).



Phase 2 progress records:

Age: 10 years, 11 months

Treatment time: 5 months into Phase 2

Number of aligners in the approved set-up:

29 aligners per arch in the initial series (5-7 day aligner changes⁷); just recently scanned for Additional Aligners

Auxiliaries planned/used (if any):

We will add precision-cuts to the Additional Aligners set-up, and use elastics as needed for midline improvements.

Plan for remaining treatment:

Detail the occlusion and monitor the eruption of the second molars. We will order a second set of Additional Aligners to align the second molars, if needed.



If you have Invisalign treatment results from your practice that you would be interested in sharing with your peers, please submit your cases to the Align Global Gallery at:

 submit.InvisalignGallery.com

⁷ Each set of aligners is designed to be replaced after 1-2 weeks of 20-22 hours of wear per day, or at the doctor's discretion.

The opinions expressed in this case report are those of the author and may not reflect those of Align Technology, Inc. The author was paid an honorarium by Align Technology, Inc. in connection with writing this report.