

Invisalign Specifix™ Attachment System for root control of the anterior teeth during Invisalign® treatment



Dr. Manal Ibrahim LaVacca

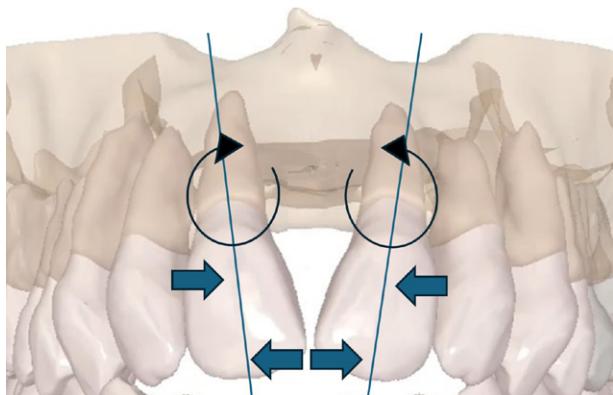
Dr. Manal Ibrahim LaVacca is a Diplomate of the American Board of Orthodontics and a dual-trained specialist in prosthodontics and orthodontics. She founded Innovative Orthodontic Centers in Illinois and, with her husband, prosthodontist Dr. Anthony LaVacca, co-founded Innovative Dental Partners, a multi-specialty group providing prosthodontic, pediatric, general, and specialty care. She earned her dental and prosthodontic degrees from the University of Illinois and completed her orthodontic training at New York University. As an Invisalign Sapphire Level Provider and the #1 orthodontic Invisalign provider in Illinois, she has treated more than 6,000 clear aligner patients across a full spectrum of complexity and is passionate about identifying, embracing, and adopting advanced technology that benefits her patients. She is an Invisalign speaker, an Align Ortho Advisory Board member, a mentor for the Align Ortho Network, serves as Align Faculty, and is a long-standing key opinion leader for Align Technology. Dr. Ibrahim sits on advisory boards for OrthoPulse, Delta Dental of Illinois, and the University of Illinois College of Dentistry, has lectured nationally and internationally, and has been recognized as “Best Dentist” in her community for 18 consecutive years.

Summary

Clear aligner attachments on anterior and posterior teeth are often required to achieve complex tooth movements such as root uprighting for implant site development, anterior extrusion, canine rotation, and posterior intrusion/open bite correction but can present esthetic and clinical workflow challenges when delivered with traditional composite techniques. The Invisalign Specifix Attachment System is a doctor-prescribed, patient-specific attachment system that uses 3D-printed attachments generated directly from the ClinCheck® treatment plan. By eliminating manual template filling and standardizing attachment geometry and placement, the Specifix attachments reduce bonding variability, simplify clinical workflows, and provide an esthetic alternative to conventional composite attachments.

Clinical background

Root angulation movements are accomplished by applying simultaneous incisal and gingival orthodontic forces perpendicular to the long axis of the tooth. The greater the distance between the force couple, the lower the level of force needed to accomplish the rotational tooth movement.



A force couple (in blue) on the incisal and gingival regions of the clinical crown is needed to create a rotational force (in black) on the root.

To enhance the engagement between the aligner and the tooth at the incisal and gingival regions of the clinical crown, aligner attachments can be bonded to the teeth in these areas. The attachments increase the surface area needed for the aligners to accomplish the desired tooth movements. These attachments are usually made from dental composite, and they are shaped and positioned in the desired location using a thermoformed attachment template. However, attachments made of dental composite can wear down during treatment, especially if the composite being used has low filler content. This wear can affect the expression of programmed tooth movements by reducing the engagement between the attachment and the aligner. The attachments and the edges around the attachments can also stain over time, depending on the porosity of the material used and the degree of composite flash present.

Unlike attachments that are made from a dental composite material, Invisalign Specifix Attachments are directly fabricated for the bonding of 3D-printed attachments onto the patient's teeth. They are made from a fully cured photo-polymerized proprietary resin that is similar in its properties to other commercially available dental composite materials. Specifix™ attachments are designed to create consistent and reliable surface areas for aligner engagement throughout the patient's treatment. While most dental composites need to be shade matched for optimal smile esthetics, no shade matching is needed for Specifix attachments and these blend in with the patient's natural tooth color to provide excellent smile esthetics during treatment. The esthetic quality of Specifix attachments can be particularly important to patients when attachments need to be bonded to the anterior teeth. In addition to root uprighting, anterior attachments are commonly used for extrusion, canine rotation, and vertical anchorage during posterior dental intrusion.

Invisalign Specifix Attachment System contains two sets of attachment positioners for each quadrant (one is a primary set, and one is a back up set) that include 3-D printed attachments. Attachments are 3D printed to the precise shape, size and accurate location per the doctor's ClinCheck treatment plan.¹ This delivery mechanism allows for accurate positioning onto the patients teeth and also eliminates the need to fill an attachment template with composite.

Case examples²

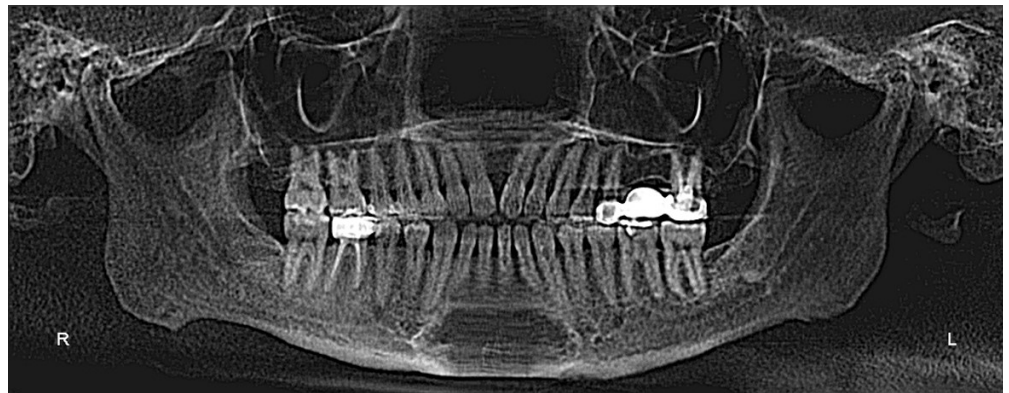
Case #1:



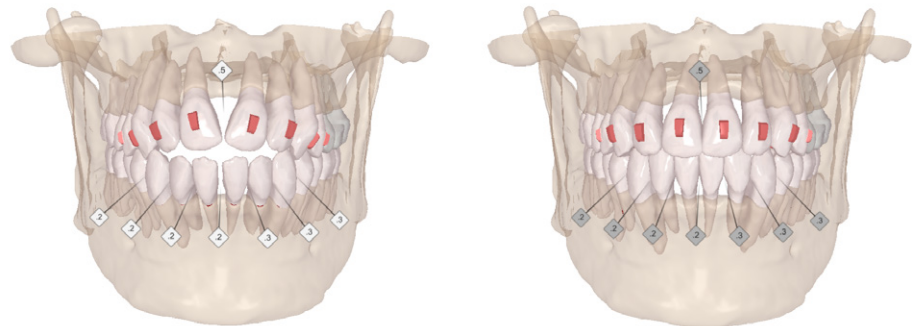
Initial photos.

A 49 years 1 month-old male patient presented with a chief concern of a maxillary diastema and an anterior open bite. He presented with bimaxillary protrusion, Class 1 canine and molar relationship on the left and right, a moderate anterior open bite, negative overjet, narrow arch forms, mesially-tipped maxillary central incisors with divergent roots, the presence of a maxillary midline frenum with midline diastemas in both arches, and a mandibular midline shift to the right.

The treatment plan was to close the anterior open bite using Invisalign® aligners with vertical rectangular Specifix™ attachments on U 5-5 to extrude the maxillary incisors and upright the maxillary central incisor roots. Lingual vertical rectangular attachments were additionally prescribed on U 3-3 to provide additional root control of the anterior segment.³ IPR was planned on L 4-4 to retract the mandibular incisors and create positive overjet. IPR between the U1s was planned to broaden the interproximal contact area and help camouflage the deficient interdental papilla.



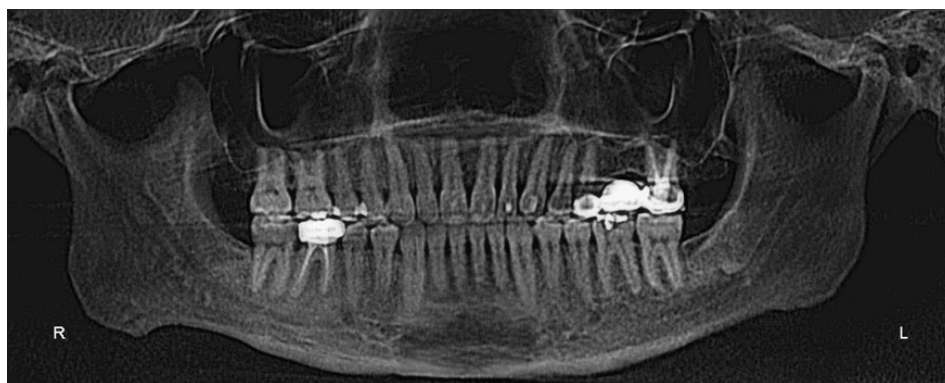
The initial panoramic radiograph showed significant distal root tip of the maxillary incisors.



The anterior view of the patient's Specifix attachment set-up (left) and the planned final outcome (right), with the CBCT integration feature in ClinCheck® Pro software to visualize the patient's roots within a combined 3D model of the crowns, roots, and supporting bone.



Specifix™ attachments at initial aligner delivery, 3 months, 6 months, 9 months, and 12 months of treatment progress.



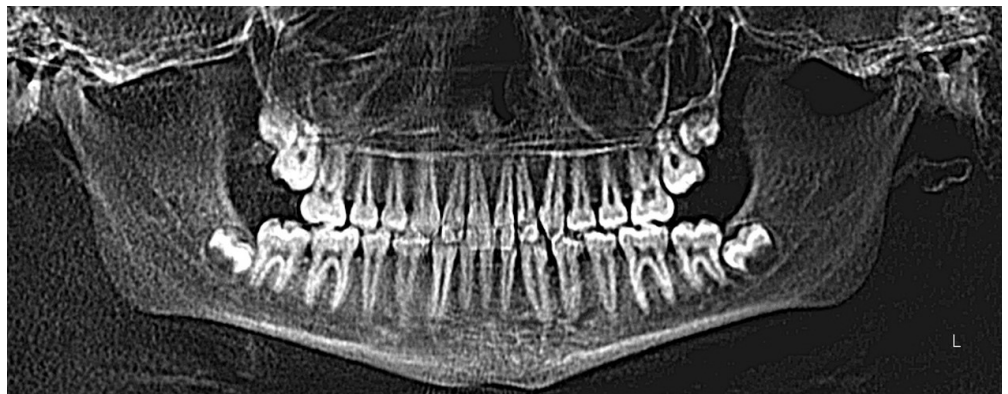
The 12-month progress panoramic radiograph showed significant improvement to the root angulation of the upper incisors. The root tip morphology was within normal limits.

Case #2:

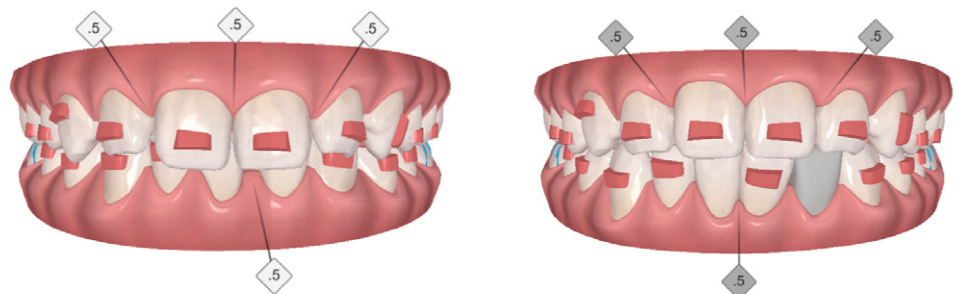
Initial photos.

A 13 years 6 months-old male patient presented with a chief concern of spacing in the lower arch due to a congenitally-missing mandibular left lateral incisor. He had a Class 1 molar and canine relationship on the left and right, a moderate deep overbite, moderate increased overjet, and a mandibular midline shift to the left due to the missing lower incisor.

The treatment plan was to idealize space for a resin-bonded bridge as an interim solution followed by a dental implant and crown after his growth was completed. To correct the deep bite, the upper and lower incisors would be intruded, so attachments on the canines and premolars were prescribed to prevent vertical disengagement of the aligners during intrusion. IPR on U 2-2 was planned to reduce the anterior overjet. IPR between L1s was planned to optimize the interproximal contact area and reduce the apparent papillary deficiency. Specifix™ attachments were also prescribed on the lower incisors for root control. Lingual vertical rectangular attachments were prescribed on LL1, 3 and UL2, 3 to enhance root control and aligner coupling in the anterior region.² Aligner cutouts for bonded buttons were prescribed on U4 and U5 (lingual) and L6s (buccal) for Class 2 elastics to improve the posterior occlusion and idealize the anterior overjet.



The initial panoramic radiograph. The lower left lateral incisor was congenitally missing.



The anterior view of the patient's Specifix attachment set-up (left) and the planned final outcome (right).



Specifix™ attachments at initial aligner delivery, 3 months, 8 months, and 12 months of treatment progress.



Pontic material was incorporated into the lower aligner to enhance anterior esthetics, support the patient's confidence during treatment, and allow ongoing evaluation of future prosthetic tooth size and morphology. The pontic was designed as a mirror image of the contralateral lateral incisor to optimize symmetry, emergence profile, and final restorative dimensions.



A 12-month progress panoramic radiograph demonstrated favorable root angulation of the teeth adjacent to the lower lateral incisor space, creating an ideal site for future implant placement. The angulation of the upper lateral incisors was also improved. The root tip morphology of the upper and lower incisors was within normal limits.

Discussion

The anterior root control in our patients treated with Invisalign® aligners and Specifix™ attachments has been excellent. In the two cases presented, the desired root angulation was achieved in the anterior teeth after 12 months of treatment, and healthy root morphology was radiographically confirmed. The planned movements appeared to be fully expressed, as demonstrated by the close correspondence between the clinical outcome and the planned outcome in the ClinCheck® simulation.



Our Invisalign patients say that the Specifix attachments are barely noticeable and feel smooth and comfortable. The 3-D printed attachments blend well with the natural color¹ of the patient's teeth, and staining concerns have been significantly reduced⁴ due the absence of composite flash.

For our team members, a distinct advantage of Specifix attachments is the simpler delivery process compared to placing composite attachments with a thermoformed template. Since Specifix attachments come 3-D printed in attachment positioners, our instrumentation for bonding attachments has been substantially reduced.

To bond Specifix attachments, there is no need to fill the trays with composite. The recommended workflow is as follows:

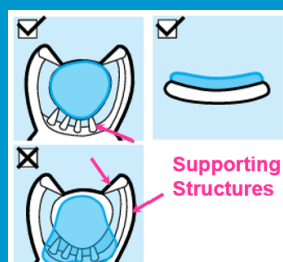
- Etch, rinse and dry teeth, apply bonding agent on teeth.
- Apply Align-recommended, commercially available dental bonding agent on the back of the 3D printed attachments.
- Insert the attachment positioner, light cure with a curing light while applying light pressure.
- Remove the attachment positioner by rotating the attachment positioner in a lingual-to-buccal motion.

Our workflow is streamlined as minimal clean-up is required after bonding Specifix attachments, and composite flash formation at the base of the attachments is no longer an issue since it is not used.

Tips in our practice

I. Bonding Invisalign Specifix attachments*

1. As with most dental bonding procedures, one of the keys to efficient and successful bonding of Specifix attachments is dry-field isolation.
2. Avoid applying excessive adhesive on supporting structures (e.g. frames and breakaway features) which connect the attachments to the jig. Dental adhesive should be carefully applied only to the etched tooth and attachment base, and the time between adhesive placement and attachment seating should be kept to a minimum in order to avoid migration of the uncured adhesive.
3. The adhesive should be brushed onto the back of the attachments chairside, immediately before seating the attachment positioner, and not ahead of time (i.e., do not place adhesive on the Specifix attachments before the patient arrives).
4. We also do not light cure any brushed adhesive before seating the attachments, because we want the adhesive layer to be as thin as possible to maximize the dimensional accuracy of the bonded attachment.



5. For precise adhesive placement, we recommend using a 1 mm superfine microbrush.
6. The adhesive is brushed onto the areas of the etched teeth where the attachments will be bonded and then air-dried to ensure a thin film.
7. Adhesive is then carefully brushed onto the base of the attachments, and the attachment positioner is seated on top of the teeth.
8. The curing tip is used to gently press the attachments towards the teeth prior to light curing the adhesive.
9. A sickle scaler is then used to separate the breakaway features (attachment supports) from the attachments.
10. Then we hold the occlusal portion of the attachment positioner – not the buccal portion – and rotate it towards the cheek to disengage it from the teeth.

* Slight variations in the workflow amongst practices might be observed. Please refer to the Align education site for more information. Users must follow all applicable manufacturer's instructions for use (IFUs) for all materials involve.

Tips in our practice (continued)

II. Specifix™ attachments removal

If the treatment goal has already been achieved, or if the planned tooth movements change in the next series of aligners, the attachments on the affected teeth are removed. At the end of treatment, any remaining attachments are de-bonded.

We prefer removing Specifix attachments using angled bracket removal pliers (Allure Ortho T-340A)*. This instrument is designed to safely debond orthodontic brackets in one piece, and in our experience it also performs well for removing Specifix attachments. Moreover, since we don't have to use a high-speed handpiece, the Specifix attachment removal can be delegated to our staff**.

* Users must follow all applicable manufacturer's instructions for use (IFUs) for all materials involved.

** Please check local regulations for procedures before delegating.

III. Additional aligners with Specifix attachments

If additional aligners are required to complete Invisalign® treatment, the Specifix attachments are retained on the teeth provided that the subsequent planned movements continue to require the same attachment design and positioning.

Conclusion

Having treated hundreds of Invisalign cases with the Invisalign Specifix™ Attachment System in our practice, we have observed that Specifix attachments are designed to deliver durable, dimensionally-stable attachment surfaces that optimize aligner engagement from start to finish. The material blends well with the patient's natural tooth color⁴, preserving excellent esthetics throughout Invisalign treatment. This innovation of 3D printed attachments to the precise shape, size and accurate location per the doctor's ClinCheck® treatment plan¹ results in a streamlined bonding workflow with no composite flash clean up. At the end of the treatment, the attachments can then be removed cleanly with angled bracket removal pliers.

“The Invisalign Specifix attachment system delivers an efficient workflow for fast application, clean de-bond, and unsurpassed esthetics for a better patient experience.”

—Dr. Manal Ibrahim LaVacca
Innovative Orthodontic Centers, Naperville, Illinois

¹ Data on File at Align Technology, as of January 28, 2026.

² These cases have also been submitted for publication in Orthodontic Products.

³ Lingual Specifix attachments are not available at the time of this publication, but an attachment template will be provided if these are part of the patient's treatment plan.

⁴ Data on File at Align Technology, as of July 2026.

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 Invisalign Gallery at:

 submit.InvisalignGallery.com