CASE 3 CLOSURE OF ANTERIOR OPEN BITE

Indications

- To close an anterior open bite.
- To correct Class II or III malocclusions with open-bite tendencies where elastics would open the bite and be contraindicated.
- To correct a reverse smile arc due to posterior tooth extrusion.

Benefits of VectorTAS vs. Conventional Mechanics

Conventional treatment of anterior open bites typically requires orthognathic surgery to impact the posterior maxilla, which allows the mandible to autorotate, thereby decreasing the anterior facial height. The risks, postoperative morbidity and costs of surgery have led to the use of alternative measures such as MEAW treatment, HPHG with comprehensive orthodontics, posterior bite plates, magnets on opposing arches and anterior tooth extrusion. None of these alternatives are without adverse side effects nor are most satisfactory in terms of stability.

With the VectorTAS, the clinician can obtain results similar to surgery without the risks and cost by intruding the posterior teeth, thus allowing the mandible to autorotate and close the bite. With the VectorTAS, the same miniscrews used to close the bite can be used to retain the intrusion and correct any AP discrepancies without typical extrusive dental side effects.

How the VectorTAS Open-Bite Splint Works

The VectorTAS approach relies on miniscrews placed bilaterally in the posterior maxilla from which Ni-Ti coil springs attach directly to hooks on an open-bite splint. The splint fosters posterior intrusion from:

- The force of the Ni-Ti coils.
- The pressure of the tongue on the two transpalatal bars.
- The pressure of the bite on the acrylic covering the occlusal surfaces.

The transpalatal bars off the palate combine with the overlapping of acrylic on the facial and lingual surfaces of the teeth to minimize possible side effects, such as buccal flaring. The splint can be placed at the beginning, during or toward the end of treatment. Two archwire tubes may be imbedded in the facial acrylic of the splint so anterior alignment can occur while the splint is in place.

Items Required for Placement:
Class I Open Bite or Reverse Smile Arc

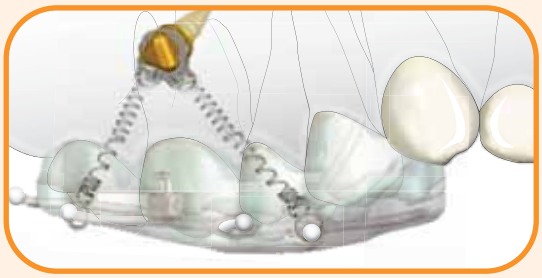
- Topical anesthetic.
- Supplemental local anesthetic delivered via MadaJet XL.
- VectorTAS Straight Driver.
- Two VectorTAS Orange 8 mm Miniscrews.
- Initial Appointment: Two VectorTAS 150 g Single-Delta Ni-Ti Coil Springs (5 or 10 mm, depending on length of attached gingiva).
- Subsequent Appointment: Two additional VectorTAS 150 g Single-Delta Ni-Ti Coil Springs (5 or 10 mm, depending on length of attached gingiva).
- AOA VectorTAS Anterior Open-Bite Splint.

Items Required for Placement:
Class II and Class III Open Bites

- Topical anesthetic.
- Supplemental local anesthetic delivered via conventional injection.
- VectorTAS Straight Driver.
- VectorTAS Tissue Punch.
- VectorTAS Pilot Notch Initiator.
- Two VectorTAS Yellow 12 mm Miniscrews.
- Initial Appointment: Two VectorTAS 150 g Single-Delta Ni-Ti Coil Springs (5 or 10 mm, depending on length of attached gingiva).
- Subsequent Appointment: Two additional VectorTAS 150 g Single-Delta Ni-Ti Coil Springs (5 or 10 mm, depending on length of attached gingiva).
- AOA VectorTAS Anterior Open-Bite Splint.
- Syringe with 30-gauge needle.*

*Supplementation of MadaJet XL anesthetic delivery via local infiltration may be necessary due to tissue thickness.

Direct Biomechanical Setup



- To keep force levels biologically compatible with efficient tooth movement, load only ***one*** spring on each side of the splint during initial activation. At a subsequent appointment, load the second spring.
- It is essential that when activated, the line of force of the springs do not create an AP discrepancy.

MINISCREW PLACEMENT			ATTACHMENT	
Class	**type**	**position**	**type**	**position**
Class I Open Bite or Reverse Smile Arc	8 mm	Between the maxillary first and second molars (or in some cases between the first molar and second premolar) at or slightly above the mucogingival junction at a 45° angle.	 150 g 5 or 10 mm depending on length of attached gingiva	**Initial Appt:** Attach one spring from each miniscrew to the hook on the splint directly below it. **Subsequent Appt:** Use two springs in an isosceles (symmetrical) triangle arrangement so there is no AP movement of roots toward the miniscrews.
Class II Open Bite	12 mm	Somewhat posteriorly on the infrazygomatic crest.*	 150 g 5 or 10 mm depending on length of attached gingiva	**Initial Appt:** Attach one spring from each miniscrew to an anterior hook on the splint to simultaneously intrude and distalize the splinted teeth. **Subsequent Appt:** Add second spring from each miniscrew to another anterior hook on the splint for continued intrusion and distalization.
Class III Open Bite	12 mm	Somewhat anteriorly on the infrazygomatic crest.*	 150 g 5 or 10 mm depending on length of attached gingiva	**Initial Appt:** Attach one spring from each miniscrew to a posterior hook on the splint to simultaneously intrude and mesialize the splinted teeth. **Subsequent Appt:** Add second spring from each miniscrew to another posterior hook on the splint for continued intrusion and mesialization.

Clinical Expectations

- Closure of the open bite usually occurs at a rate of approximately 1 mm per month.
- Typically, the splint should be left in place for six months, but the timeframe is dependent upon the extent of the vertical and/or AP discrepancy.
- The patient's comfort level should be similar to that experienced with the delivery of other types of intraoral appliances; however, some patients may require an adjustment period of approximately two weeks.
- Assure the patient that the appliance will at first *appear* to make the open bite worse but will close with time.

*Tissue overgrowth is often observed when placing miniscrews on the infrazygomatic crest. Ni-Ti coils are recommended for continuous activation in case the head of the miniscrew becomes overgrown with tissue.