TAD Clinical Reference Guide

A Case Study in Successful TAD Placement & Efficient Biomechanics

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VERSION 3
Includes case pictures and step-by-step instructions for 18 difficult indications!
An orthodontic mini-implant can be inserted using multiple different protocols depending on your individual preference and the anatomical relationships at the given insertion site. The following recommendations are general guidelines to keep TAD insertion simple and successful.

**Step 1–Implant Site Location**

Patient x-rays, models, and tomas® X-Marker can all be used to help identify the proper TAD insertion site. The ideal insertion sites should be in the buccal alveolus, the lingual alveolus of the maxilla or the palate.

**Step 2–Anesthesia**

Use a topical anesthetic with a potent formulation (e.g. TAC 20% Alternate), followed optionally by local infiltration anesthesia depending on the thickness of the soft tissue.

**Step 3–Tissue Punch (optional)**

It is recommended to note the tissue depth with a probe. The tissue punch step is optional attached gingiva and recommended in mucosa. It provides for clean tissue borders without compression trauma to the peri-implant soft tissues.

**Step 4–CB Perforation (optional)**

Pre-drilling is not required when placing a self-drilling TAD, but it can be beneficial in some cases (especially in the mandible). Center drilling the bone can help the threads to engage easier and reduce slippage. In areas of increased cortical bone thickness, pre-drilling is advisable to reduce excessive bone compression.

**Step 5–Preparation of TAD**

Record TAD information (i.e. lot number, etc.) in patient’s records. Open blister pack and hold packaging with colored applicator at bottom. Remove glass ampule and rubber stop. Use any tomas® driver to remove TAD from cradle.

**Step 6–Final Insertion**

Final insertion can be completed with any driver instrument in the tomas® system, such as the screwdriver, contra-angle driver, wheel & applicator, or torque ratchet & applicator, depending on your preference.
overview of starter kit

- tomas®-starter kit
  REF 302-150-20
  Includes all items shown

- tomas®-applicator
  REF 302-004-20

- tomas®-pin (6mm)
  REF 302-106-00

- tomas®-pin (8mm)
  REF 302-108-00

- tomas®-pin (10mm)
  REF 302-110-00

- tomas®-tray
  REF 302-155-00

- tomas®-round bur
  REF 302-003-00

- tomas®-tissue punch
  REF 302-001-00

- tomas®-SD drill bit
  REF 302-103-00

- tomas®-contra angle hand driver
  REF 400-602-00

- tomas®-torque ratchet
  REF 302-004-40

- tomas®-screwdriver
  REF 302-004-10

- tomas®-wheel
  REF 302-004-30

- tomas®-conical driver
  REF 302-001-10

- tomas®-crimp hook 3L / 3R
  Crimpable hook with 3 vector levels for use in attaching springs and elastics to clear aligners.
  10 pieces each, left side: REF 400-600-28 / right side: REF 400-600-29

- tomas®-coil springs
  Light, Medium, or Heavy tension
  Custom-designed NiTi spring with a larger eyelet to fit the tomas®-pin.
  10 pieces, REF 302-012-001/020

- tomas®-double tubes
  Std. Edgewise DB buccal tube
  Direct bind tube provides auxiliary slot for doctors who normally use single tubes.
  10 pcs, .018 slot REF 724-018-51
  10 pcs, .022 slot REF 724-019-51

- tomas®-bond hook 3L / 3R
  Bondable hook with 3 vector levels for use in attaching springs and elastics to clear aligners.
  10 pieces each, left side: REF 400-600-28 / right side: REF 400-600-29

- tomas®-uprighting spring
  SS lever arm with a custom NiTi uprighting spring that provides simultaneous intrusion or extrusion while uprighting molars.
  10 pieces, REF 302-009-00

- tomas®-rectangular power arm
  Crimpable 21 x 25 rectangular power arm that easily connects the tomas®-pin to the base arch.
  10 pieces, REF 302-015-00

- tomas®-contra angle hand driver
  REF 400-602-00

- tomas®-tissue punch
  REF 302-001-00

- tomas®-SD drill bit
  REF 302-103-00

- tomas®-round bur
  REF 302-003-00

- tomas®-tissue punch
  REF 302-001-00

- tomas®-mechanical driver
  REF 302-004-50

- tomas®-nickel tightening hook
  Crimpable 21 x 25 nickel tightening hook for use in attaching springs to archwire.
  10 pieces, left side: REF 400-600-03 / right side: REF 400-600-07

- tomas®-T-wire
  21 x 25 SS T-wire used for anchoring segments of teeth directly to a TAD.
  1 piece, REF 302-024-00

- tomas®-round bur
  REF 302-003-00

- tomas®-tissue punch
  REF 302-001-00

- tomas®-SD drill bit
  REF 302-103-00

- tomas®-contra angle hand driver
  REF 400-602-00

- tomas®-torque ratchet
  REF 302-004-40

overview of auxiliaries

- tomas®-contra angle hand driver
  REF 400-602-00

- tomas®-tissue punch
  REF 302-001-00

- tomas®-SD drill bit
  REF 302-103-00

- tomas®-round bur
  REF 302-003-00

- tomas®-tissue punch
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**Indication**
- To distalize maxillary molars to correct molar relationship and create space

**Benefits of Using TADS**
- Distalization of mandibular molars without flaring of mandibular incisors

**Steps for TAD Implementation**

**Preparation**
- Leveling and alignment (partial or complete)
- Adequate root parallelism
- Stainless steel arch wire (continuous or segmental)

**TAD Placement**
- Buccal, between 1st and 2nd bicuspid

**Loading**
- Option 1 - Crimp \textit{tomas}® Rectangular Power Arm to base arch and position flush against mesial of premolar bracket
- Bond other end of \textit{tomas}® Rectangular Power Arm into TAD w/ LC composite
- Option 2 - Bond \textit{tomas}® T-Wire directly to premolars w/ LCR composite and into TAD w/ LC composite
- Place \textit{tomas}® Open Coil Springs on arch wire between 2nd premolar and 1st molar
- Add crimpable stops during each patient visit to compress coil spring and continue distalizing

**Option 1 - Power Arm prevents mesial movement**

**Option 2 - T-wire locks in bicuspid**

**Required Auxiliaries**
- \textit{tomas}® Power Arm (Option 1)
- \textit{tomas}® Open Coil Spring
- \textit{tomas}® T-Wire (Option 2)

**Dr. Baumgaertel’s Clinical Pearls:**
- If anterior retraction is planned, the TAD will interfere with tooth movement. It will need to be removed and re-positioned.
- Another option is to overcorrect distalization and thus account for anchorage loss during the retraction phase without TAD.
- This set-up can be used segmentally (treating one single quadrant) or on a continuous arch wire.

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**Indication**
- Class II subdivision

**Benefits of Using TADS**
- Non-extraction correction of class II subdivision

**Steps for TAD Implementation**

**Preparation**
- Complete maxillary leveling and alignment
- Continuous stainless steel arch wire (rectangular)

**TAD Placement**
- Palatal placement into alveolar process between maxillary 2nd bicuspid and 1st molar
- Insertion height should be at least 8 mm from the alveolar crest, angled slightly apical to allow retraction of 2nd bicuspid past \textit{tomas}® Pin without interference

**Loading**
- Bond retraction power arm to lingual of maxillary 1st molar with lingual retainer composite
- Load \textit{tomas}® Pin directly with either \textit{tomas}® closed coil spring or \textit{tomas}® Power Chain
- On buccal, lace all teeth to 1st molar that should be distalized

**Before - Unilateral Class II Patient**

**Before - Unilateral Class II (enlarged view)**

**Required Auxiliaries**
- \textit{tomas}® Power Chain
- \textit{tomas}® Closed Coil Spring (alternatively)

**Dr. Baumgaertel’s Clinical Pearls:**
- Although initially developed for unilateral distalization this approach can be used equally well for bilateral en-masse retraction in a bilateral class II case, the longer the wire span, the greater the wire dimension.
**Indication**
- To distalize maxillary molars to correct molar relationship and create space

**Benefits of Using TADS**
- Distalization of maxillary molars without the common side effects of traditional distalizing solutions such as tipping molars and flaring of incisors

**Steps for TAD Implementation**

**Preparation**
- Complete leveling and alignment
- Adequate root parallelism
- Continuous stainless steel arch wire

**TAD Placement**
- Palatal placement at 1st / 2nd bicuspid level (paramedian)

**Loading**
- Adapt tomas® T-wire (cross bar) to lingual contour of incisors and fit passively into TAD cross-slot(s)
- Secure T-wire in tomas® head using LC composite and bond to lingual surface of incisors using LCR composite
- Place tomas® Open Coil Springs on arch wire immediately mesial of the group of teeth that requires distalization

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**Indication**
- To close bilateral bicuspid extraction spaces by retracting the anterior canine-to-canine segment en-masse

**Benefits of Using TADS**
- Compliance free retraction of anterior segment
- Reduced treatment time vs. traditional space closure with canine retraction followed by anterior retraction
- Posterior anchorage loss is prevented

**Steps for TAD Implementation**

**Preparation**
- Complete leveling and alignment w/ continuous stainless steel arch wire
- Buccal segments are distalized with tomas® T-Wire mechanics (See Case 3 on opposite page)

**TAD Placement**
- In the palate at the level of the 2nd bicuspids slightly off center (paramedian)
- If tomas® Pin is already present from distalization (see case 3), no further TAD placement is required

**Loading**
- Customize TPA out of 21x25 ss wire
- Bond customized TPA to lingual of the posterior segments w/ LCR composite & connect to tomas® Pin w/ LC composite
- On the buccal, install a full arch tomas® Power Chain for retraction

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**Dr. Baumgaertel’s Clinical Pearls:**
- If anterior retraction is planned after the distalization, the TAD position should be further distal (2nd bicuspid level).
- In cases with a deep bite or strong cusp embrasure, it can be beneficial to unlock the occlusion with occlusal bite elevators.
- The larger the tooth segment, the more difficult it becomes & it may make sense to subdivide the segments.

**Dr. Baumgaertel’s Clinical Pearls:**
- The longer the wire span, the greater the wire dimension that should be used for the anchorage wire.
- Think ahead: place tomas® Pin slightly further posterior than for T-Wire protraction.
Indication
- Distal driving of posterior to correct unilateral Class II occlusion and alleviate anterior crowding

Benefits of Using TADS
- Provides force and anchorage for movement, while the aligner provides the guidance
- Reduces treatment time with en-masse movement
- Allows for the application of force at the level of the tooth center of resistance for bodily movement

Steps for TAD Implementation
Preparation
- Submit patient records to aligner vendor with specific instructions prescribing the intended movement
- Check fit and clearance of aligners

TAD Placement
- Palatal placement between maxillary 1st molar & 2nd Molar
- Ideally the TAD should be angled slightly apical to allow retraction of 1st Molar past tomas® Pin without interference

Loading
- Bond 3-level tomas® Power Arm for ideal force level through center of resistance
- Attach tomas® Closed Coil Springs or Power Chain to tomas® pin head and then to tomas® Bondable Power Arm

Dr. Celenza’s Clinical Pearls:
- The tomas® bondable power arms were not available when I started this case, but they make it much easier to bond to the tooth & pull through the center of resistance.

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- The tomas® bondable power arms were not available when I started this case, but they make it much easier to bond to the tooth & pull through the center of resistance.
Dr. Baumgaertel’s Clinical Pearls:
- Indirect molar protraction can also be done segmentally, so a full arch bonding is not necessary if the only treatment objective is the unilateral space closure.
- Bonding lingual buttons on the 1st bicuspid and the molar and attaching a tomas® Power Chain can reduce the rotational moment and reduce friction.

Dr. Petrey’s Clinical Pearls:
- Direct molar protraction can also be achieved segmentally, so a full arch bonding may not be necessary.
- When not using a double buccal tube, protraction may be achieved by attaching the tomas® closed coil spring directly to the molar hook, however this may cause an excessive vertical force component, tipping of the molar, increased friction and clinical treatment time.

CASE 7
Indication
- To close posterior spaces

Benefits of Using TADS
- Space closure without retraction (loss of anchorage) of the lower incisors and impact on overjet
- Potential savings on cost of implant to patient

Steps for TAD Implementation
Preparation
- Complete leveling and alignment
- Adequate root parallelism
- Continuous stainless steel arch wire

TAD Placement
- Buccal, between 1st and 2nd bicuspid

Loading
- Option 1 - Crimp tomas® Rectangular Power Arm to base arch and position flush against distal of premolar bracket
- Bond other end of tomas® Rectangular Power Arm into TAD w/ LC composite
- Option 2 - Bond 19x25 stabilization wire directly to premolar w/ LCR composite and into TAD w/ LC composite
(With this option, it is recommended to steel tie lower incisors due to distal drifting of base arch from friction)
- Place tomas® Closed Coil Spring on base arch from premolar to molar (alternatively power chain can be used)

Option 1 - Using Rectangular Power Arm
Option 2 - Using 19x25 SS Stabilization Wire

Photo courtesy of Dr. Jon Silcox

CASE 8
Indication
- To close a posterior unilateral space by protraction of molars

Benefits of Using TADS
- Space closure without retraction (loss of anchorage) of the incisors and impact on overjet
- Avoids shift of midline due to anchorage loss
- Allows for Unilateral space closure with segmental mechanics (if desired)
- Potential savings on cost of implant to patient

Steps for TAD Implementation
Preparation
- Complete leveling and alignment
- Adequate root parallelism
- Continuous stainless steel arch wire

TAD Placement
- If 1st molar is missing: between 1st and 2nd bicuspid
- If 2nd bicuspid is missing: between canine and 1st bicuspid

Loading
- Create protraction power arm with heavy gauge SS wire (as shown) and insert in auxiliary tube
- Install tomas® Closed Coil Spring on TAD and protraction power arm

Required Auxiliaries
- tomas® Closed Coil Spring
- tomas® Rectangular Power Arm
- tomas® Power Chain (alternatively)

Required Auxiliaries
- tomas® Closed Coil Spring
- tomas® Double Buccal Tube
- Customized Protraction Power Arm

Before

After
Dentaaurum is very proud of our rich history in offering innovative & quality German-engineered products to the dental market for over 125 Years! We realize that this long history would not be possible, except for the loyal support of our key customers who select Dentaaurum for the majority of the products they use.

Dentaaurum USA has launched our Buying Group Club (BGC) with those specific customers in mind. This program allows each of our loyal customers the ability to earn free product credits in amount of 35-50% of EVERY dollar spent. In fact, the average BGC bracket & band customer earns over $7,500 in free product each year!

Many companies are offering confusing reward programs which employ tricks & gimmicks that greatly reduce the value of these programs. Dentaaurum USA does not apply any exclusions on the use of credits, we do not offer confusing “point-based” rewards, our credits are not redeemed at retail value & most importantly our credit dollars do not expire, as long as you continue purchasing products from us!

Our BGC program is exactly what it sounds like - Buy your key products from us, we give you free products in return!

*Please note: The Dentaaurum BGC Program is only valid for customers of Dentaaurum USA. This program is not valid in other countries.

**FAQ**

**Q:** What application or registration process is required to join the BGC?
**A:** None. Contact your local sales rep to learn about minimum purchase requirements to begin earning credits today!

**Q:** How many BGC credits will I earn on every dollar spent?
**A:** Bracket & band customers receive up to 50% and lab customers receive up to 35% in BGC credits on every dollar spent.

**Q:** How soon are the BGC credits earned on each purchase?
**A:** BGC credits are earned and available for use on the following Monday after each purchase.

**Q:** Are BGC credits redeemed at retail value?
**A:** No. BGC credits are redeemed at fairly discounted rates.

**Q:** Are any products excluded from redemption with BGC credits?
**A:** No. BGC credits can be used for any Dentaaurum product, other than the main products being purchased to earn credits.

**Q:** Will my BGC credits ever expire?
**A:** No. As long as purchasing activity occurs within a 24-month period, the BGC credits will never expire.*
**Indication**
- To close posterior uni- or bilateral space by protraction of molars
- Extreme protraction in cases with multiple congenitally missing teeth

**Benefits of Using TADS**
- Space closure without retraction (loss of anchorage) of the incisors and impact on overjet
- Maxillary midline shift is all but avoided

**Steps for TAD Implementation**

**Preparation**
- Complete leveling and alignment
- Adequate root parallelism
- Continuous stainless steel arch wire

**TAD Placement**
- Option 1 - For bilateral space closure, place tomas® Pin at level of 1st or 2nd bicuspids (paramedian)
- Option 2 - For unilateral space closure, place 2 tomas® Pins at paramedian location in sagittal orientation:
  - First tomas® Pin at 1st bicuspoid level; Second tomas® Pin at 2nd bicuspoid level
- Slots lined up in sagittal orientation

**Loading**
- Adapt tomas® T-wire (cross bar) to lingual contour of incisors and fit passively into TAD cross-slot(s)
- Secure T-Wire in tomas® head using LC composite and bond to lingual surface of incisors using LCR composite
- On the buccal, install full arch tomas® Power Chain for protraction

**Option 1 - Bilateral space closure**

**Option 2 - Unilateral space closure**

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**Dr. Baumgaertel’s Clinical Pearls:**
- The tomas® T-Wire should be used with occlusal bite elevators to protect the auxiliary and unlock the bite to decrease the hindering effects of a strongly interdigitated occlusion.
- Rigidly connecting two TADS appears to lower failure rates according to the current literature.
- For protraction over longer distances crimpable hooks can be placed on the arch wire to attach tomas® Closed Coil Springs.

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**Indication**
- Multi-tasking to correct deep overbite, crowding, and protrusion by combination of indirect incisor intrusion and direct retraction

**Benefits of Using TADS**
- Intrusion of incisors without molar anchorage loss, extrusion, or tipping

**Steps for TAD Implementation**

**Preparation**
- Adequate root parallelism

**TAD Placement**
- Bilaterally, buccal, between 2nd bicuspid and 1st molar

**Loading**
- Attach tomas® medium coil spring to the TAD
- Customize a “utility arm” with 17.5 x 17.5 Beta-Ti wire segment
- Bond “utility arm” & tomas® coil spring into TAD cross-slot w/ LC composite
- Use tomas® coil spring to retract teeth and apply tip back bends as needed in “utility arm” to intrude incisors

**Alternate Method:**
- You can also anchor molars by bonding a 17x25 SS wire segment into the tomas® head and insert other end of wire into auxiliary tube on molar (as shown in image - above right)
- If no auxiliary tube is present, bond wire segment directly to buccal molar surface using lingual retainer composite
- Insert standard utility arch into main molar tube and load incisors to intrude

**Required Auxiliaries**
- Custom “Utility Arm” w/ Beta-Ti wire
- Alternate: 17x25 SS Wire Segment & Standard Utility Arch

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**Dr. Bowman’s Clinical Pearls:**
- Only light intrusion forces from the “utility” arms is required so rotational forces to the miniscrew are minimal.
- These are the only incisor intrusion approaches that can truly prevent incisor flaring.
- When using the alternate method, crinch utility arch back to prevent incisor flaring.
**Dr. Baumgaertel’s Clinical Pearls:**
- To prevent buccal flaring of the molars as a side effect, install a transpalatal arch. It should have sufficient clearance to the palate to not interfere with the intrusion.

**Dr. Frey’s Clinical Pearls:**
- Posterior intrusion in the maxilla produces buccal tipping of the crowns. To prevent this side effect, use a removable transpalatal arch and bend in some buccal root torque to counteract this moment.
- Gable bends to diverge the roots may be useful.

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**Indication**
- To intrude over-erupted maxillary bicuspids
- To intrude over-erupted maxillary molars

**Benefits of Using TADS**
- Intrusion of an over-erupted tooth or tooth segment to allow for restoration of an extraction space in the opposing arch

**Steps for TAD Implementation**

**Preparation**
- Single Molar Intrusion - No Preparation Necessary
- Tooth Segment Intrusion - Prepare a custom aligner to fit over the segment of teeth that you plan to intrude

**TAD Placement**
- Option 1: Single molar intrusion - Place TAD: Buccal, between 1st and 2nd molar Palatal, between 2nd bicuspid and 1st molars
- Option 2: Bicuspid intrusion, place TAD between bicuspids and use custom clear aligner to intrude as a segment

**Loading**
- Suspend tomas® Nikodem® Spring between both TADs and pass it over the occlusal of the molar or custom aligner
- Place a small amount of composite on occlusal tooth surface to keep the tomas® Nikodem® Spring in place (Optional)

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**Indication**
- To level an occlusal cant in both arches by using posterior intrusion on opposite sides of each arch simultaneously

**Benefits of Using TADS**
- This approach provides an effective alternative for patients declining surgical correction. Results are achieved relatively quickly with greater control, less discomfort, and less risk than traditional surgical correction

**Steps for TAD Implementation**

**Preparation**
- Complete leveling and alignment with adequate root parallelism
- Continuous stainless steel arch wire
- Removable Transpalatal Arch & Lower Lingual Holding Arch

**TAD Placement**
- On the maxillary intrusion side, place one TAD between 1st molar and 2nd bicuspid (or between molars), and the other TAD between the lateral and canine
- On the mandibular intrusion side, place one TAD between the 1st molar and 2nd bicuspid (or between the molars)

**Loading**
- Suspend tomas® Power Chain from the TAD head, pass around the arch wire and attach the other end back to the TAD.
- Alternatively, this can be done with the tomas® Nikodem Spring
- After the maxillary arch is completely level, tie steel ligatures from both tomas® heads directly down to the arch wire to stabilize the new vertical position of the maxilla
- After the desired vertical position of the maxilla is stabilized with steel ligatures, use interarch vertical elastics to extrude the lower arch up to the new vertical position of the maxillary arch

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**CASE 11**

**posterior intrusion / single tooth**

**Indication**
- To intrude over-erupted maxillary bicuspids
- To intrude over-erupted maxillary molars

**Benefits of Using TADS**
- Intrusion of an over-erupted tooth or tooth segment to allow for restoration of an extraction space in the opposing arch

**Steps for TAD Implementation**

**Preparation**
- Single Molar Intrusion - No Preparation Necessary
- Tooth Segment Intrusion - Prepare a custom aligner to fit over the segment of teeth that you plan to intrude

**TAD Placement**
- Option 1: Single molar intrusion - Place TAD: Buccal, between 1st and 2nd molar Palatal, between 2nd bicuspid and 1st molars
- Option 2: Bicuspid intrusion, place TAD between bicuspids and use custom clear aligner to intrude as a segment

**Loading**
- Suspend tomas® Nikodem® Spring between both TADs and pass it over the occlusal of the molar or custom aligner
- Place a small amount of composite on occlusal tooth surface to keep the tomas® Nikodem® Spring in place (Optional)

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**CASE 12**

**occlusal cant correction / direct**

**Indication**
- To level an occlusal cant in both arches by using posterior intrusion on opposite sides of each arch simultaneously

**Benefits of Using TADS**
- This approach provides an effective alternative for patients declining surgical correction. Results are achieved relatively quickly with greater control, less discomfort, and less risk than traditional surgical correction

**Steps for TAD Implementation**

**Preparation**
- Complete leveling and alignment with adequate root parallelism
- Continuous stainless steel arch wire
- Removable Transpalatal Arch & Lower Lingual Holding Arch

**TAD Placement**
- On the maxillary intrusion side, place one TAD between 1st molar and 2nd bicuspid (or between molars), and the other TAD between the lateral and canine
- On the mandibular intrusion side, place one TAD between the 1st molar and 2nd bicuspid (or between the molars)

**Loading**
- Suspend tomas® Power Chain from the TAD head, pass around the arch wire and attach the other end back to the TAD.
- Alternatively, this can be done with the tomas® Nikodem Spring
- After the maxillary arch is completely level, tie steel ligatures from both tomas® heads directly down to the arch wire to stabilize the new vertical position of the maxilla
- After the desired vertical position of the maxilla is stabilized with steel ligatures, use interarch vertical elastics to extrude the lower arch up to the new vertical position of the maxillary arch
**Indication**
- Unilateral or bilateral intrusion of single teeth or entire tooth segments

**Benefits of Using TADS**
- Correction of open bite without surgery or patient compliance issues

**Steps for TAD Implementation**

**Preparation**
- Segmental leveling of desired tooth segment for intrusion

**TAD Placement**
- Buccal or palatal between 2nd bicuspid and 1st molar
- Alternate Option - Place between bicuspids

**Loading**
- Bond short rigid anchorage wire directly to premolar w/ LCR composite and into TAD w/ LC composite
- Use 19x25 Beta-ti wire to intrude molars
- Place step bends in 19x25 Beta-ti wire (as needed) during follow-up patient visits to continue intruding

**Dr. Baumgaertel’s Clinical Pearls:**
- Convertible tubes on 1st molars allow greater flexibility and simplify installation.
- Adding lingual crown torque to intrusion segment will control intrusion of palatal/lingual cusps.

**Alternate: Ulysses Spring for anterior intrusion & elastic chain for posterior intrusion**

**Steps for TAD Implementation**

**Preparation**
- Level and align and achieve root parallelism (specifically in posterior)
- Progress to a continuous stainless steel arch wire
- At activation appointment, bond eyelet loop to lingual 1st Molars

**TAD Placement**
- Buccally and Palatally bilaterally between 2nd Premolar and 1st Molar or between 1st and 2nd Molars. (Contra-angle hand driver recommended)

**Loading**
- Buccal TADs - Attach powerchain from the undercut of the collar of the tomas® head, wrap around the base arch, and reattach back to the TAD
- Palatal TADs - Attach powerchain from the undercut of the collar of the tomas® head, through the bonded eyelet loop on the lingual and back to the TAD

**Required Auxiliaries**
- Rigid wire connector (min. wire dimension 17x25 ss)
- 19x25 TMA segmental intrusion wire

**Dr. Petrey’s Clinical Pearls:**
- Set-up can also be used for single tooth or segmental intrusion, or even possibly with no wires at all.
- Subsequent adjustments simply include reactivation of powerchain lessening chair time and increasing patient comfort.
- This avoids TPAs which can lead to patient comfort, speech, and hygiene issues, as well as added fabrication time and cost.

**Open Bite was closed in 6 months**

**Required Auxiliaries**
- tomas® Power Chain
- tomas® Nikodem® Spring (alternatively)
**Indication**
- To assist in the eruption of Impacted Maxillary Canines

**Benefits of Using TADS**
- NIWI accessory wires may be utilized for forced eruption without the risk of intrusion of adjacent teeth
- Complete leveling and alignment for adequate root parallelism of adjacent teeth
- If space and adjacent tooth root position are not an issue, then Canine may be erupted segmentally without the need for full arch treatment.

**Steps for TAD Implementation**

**Preparation**
- Adap the horizontal leg of T-Wire to the lingual surface of the maxillary first molar and second bicuspid as close to the gingival margin as possible.
- Bond a bracket occlusal to the T-Wire on the lingual surface of the second bicuspid.

**TAD Placement**
- Palatal placement at 90˚ to cortical plate.
- Care should be taken to avoid the impacted tooth & its eruption path.

**Loading**
- Adapt tomas® T-Wire to lingual contour of the adjacent lateral incisor and premolar.
- The tomas® T-Wire may be contoured to adapt to the curvature of the patient’s palate.
- Secure T-Wire in tomas® head and bond to lingual surface of incisor & premolar using lingual retain composite.

**Required Auxiliaries**
- tomas® T-Wire
- Power Chain

Dr. Petrey’s Clinical Pearls:
- Canine eruption can also be done segmentally, where a full arch bonding may not be necessary in early stages while the Canine is erupting, reducing the total time in full appliances.
- Any preferred methods for eruption may be employed, using NIWI wires as shown above, or using elastics with gold chain.
- This same technique is not restricted to impacted Canines, and may be utilized with other impacted teeth.

Dr. Petran’s Clinical Pearls:
- The lever arm should be reactivated and engaged on 4-week intervals until the canine has erupted to the level of the mandibular occlusal plane, but not into a crossbite relationship. This usually requires 4 - 6 months.
- Brackets can then be placed for further arch development, leveling and final retrieval of the formerly impacted canine.
**Indication**
- To upright a mesially-inclined molar due to ectopic eruption of the molar or premature tooth loss of an adjacent tooth

**Benefits of Using TADS**
- Uprights molar without any undesired reciprocal movements (i.e., extrusion and/or mesialization) of the adjacent teeth
- Molar uprighting can occur without bonding of the entire dental arch

**Steps for TAD Implementation**

**Preparation**
- None required

**TAD Placement**
- If 2nd molar is to be uprighted: between 1st and 2nd bicuspid
- If 1st molar is to be uprighted: between canine and 1st bicuspid

**Loading**
- See opposite page for loading instructions

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**Option 1 - Uprighting with Extrusion**
- Place TAD approximately 10 mm from occlusal plane
- Insert uprighting spring into slot of TAD & buccal tube
- Extend NiTi wire out to achieve more uprighting force
- Secure uprighting spring into TAD with LC composite
- Place a crimp in center of crimping tube w/ heavy wire cutter
- Cut off excess SS wire to the mesial of the TAD

**Option 2 - Uprighting with no vertical effect**
- Place TAD approximately 10 mm from occlusal plane
- Insert a 30° intrusion bend into SS wire on distal side of TAD
- Insert uprighting spring into slot of TAD & buccal tube
- Extend NiTi wire out to achieve more uprighting force
- Secure uprighting spring into TAD with LC composite
- Place a crimp in center of crimping tube w/ heavy wire cutter
- To avoid rotation forces, place a 90° bend in SS wire at mesial side of TAD & bond wire to tooth w/ lingual retainer composite

**Option 3 - Uprighting with Intrusion**
- Place TAD approximately 10 mm from occlusal plane
- Insert a 45° intrusion bend into SS wire on distal side of TAD
- Insert uprighting spring into slot of TAD & buccal tube
- Extend NiTi wire out to achieve more uprighting force
- Secure uprighting spring into TAD with LC composite
- Place a crimp in center of crimping tube w/ heavy wire cutter
- To avoid rotation forces, place a 90° bend in SS wire at mesial side of TAD & bond wire to tooth w/ lingual retainer composite

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**Keys for use of tomas® uprighting spring**

- Place TAD approximately 10 mm from occlusal plane
- Insert uprighting spring into slot of TAD & buccal tube
- Extend NiTi wire out to achieve more uprighting force
- Secure uprighting spring into TAD with LC composite
- Place a crimp in center of crimping tube w/ heavy wire cutter
- Cut off excess SS wire to the mesial of the TAD

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**Required Auxiliaries**

- tomas® Uprighting Spring
- Steel Ligature Wire (optional)
**Indication**

- To temporarily restore missing teeth in adolescents post orthodontic treatment prior to skeletal maturation and permanent restorations.

**Benefits of Using TADS**

- As permanent restorative implants may not be placed until completion of growth, placement of TADs with pontics allow for:
  - Esthetic temporary restoration prior to complete bone development and maturation.
  - No need for Maryland Bridges bonded to teeth, or removable flipper retainers with pontic teeth on them that cannot be worn while eating, and break easily.

**Steps for TAD Implementation**

**Preparation**

- Complete all active tooth movement in the location of the missing tooth. Preparation should be identical to the set-up for traditional endosseus permanent restorative implants.

**TAD Placement**

- TADs should be placed on the center of the ridge palatal enough to ensure full bone contact and seated to the soft tissue collar. No less than the 10 mm tomas® pin should be used.

**Loading**

- See instructions on opposite page.

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**Before**

[Images of before views of a dental case with missing laterals]

**After**

[Images of after views of the same dental case with missing laterals restored]

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**Required Auxiliaries**

- Automix bisacrylic resin temporary pontic (recommended)
- Powder-liquid acrylic temporary pontic (alternatively)

**Dr. Petrey’s Clinical Pearls:**

- Be sure to place the implant in the thick bone of the ridge, but palatal enough so the implant does not show through the front of the restoration.
- Place a bonded lingual retainer on adjacent teeth to the temporary restorations and lay it against the pontics. This allows for support of the temporary restorations without fixing the adjacent teeth to the TADs, restricting their eruption.

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**Loading instructions for pontics**

- Ensure there is no mobility with the TAD.
- If primary stability is achieved, test fit the premade pontic directly on the TAD (Pontic should be pre-formed custom to the patient and hollowed or with a window to the palatal side for placement on TAD).
- Once test fit is complete, fill the pontic with resin or acrylic material and place on the TAD. (It may be necessary to add additional resin material to the palatal side of the restoration for stability, below the line of occlusion.)
- Remove excess flash material and finish restoration in place.
- Bond a fixed lingual retainer to adjacent teeth but do not bond to the pontics.

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*All photos above courtesy of Dr. Joseph S. Petrey*

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A Comparison of Bonding - Olivier Sorel et al.
"Revue d’Orthopedie Dento Faciale" Vol. 33 / 1999

Laser base under magnification

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