

**Introduction to TADs
Temporary Anchorage
Devices**

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Orthodontic Anchorage
E. H. Angle (1907), L. Ottofy (1923)

Orthodontic Anchorage

Denotes the nature and the degree of resistance to displacement of teeth offered by an anatomical unit when used for the purpose of tooth movement

Newton's Third Law of Motion (1687)

“FOR EVERY ACTION THERE IS AN EQUAL AN OPPOSITE REACTION”

How Have we Preserved Anchorage in the Past?

APPLIANCES:	SWA - MECHANICS:
<ul style="list-style-type: none"> ■ Head Gear ■ TP/Nance Combo ■ Lip Bumper ■ Lingual Arches ■ Rick-A-Nator ■ Removable Appliances, etc. 	<ul style="list-style-type: none"> ■ Cortical Bony Anchorage ■ Root Mass ■ Crimpable Stops ■ “V” Bends on the AW ■ Utility Arches ■ “Off Center Bends” (Differential Torque), etc.

With the invention and development of the **Temporary Anchorage Device (TAD)**, a.k.a Mini-screw, Micro-screw, Mini-implant, Micro-implant, we are able to achieve **“ABSOLUTE” MAXIMUM ANCHORAGE**


ABSOLUTE ANCHORAGE???

According to evidence based research, there is a definite displacement of the TAD when applying the force in the neighborhood of **0.5 - 1.5 mm**, depending on:

- The size of the TAD
- Thickness of the cortical bone
- The amount and direction of the force_

Ancor Pro™ TAD System

Ancor Pro™ Orthodontic Anchorage System Hands-On Course
DR. PABLO ECHARRI

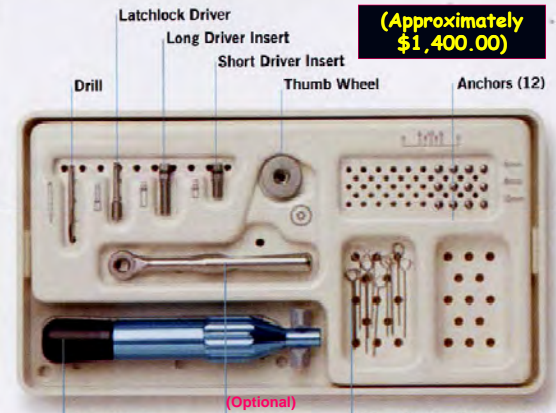


- Dr. Pablo Echarrri has over 25 years of clinical experience in orthodontics and operates a private practice in Barcelona, Spain.
- He obtained his DDS from the University of Medicine, Uruguay.
- Currently the President of the IAOI (Sociedad Iberoamericana de Ortodoncia Lingual)
- President of the Scientific Committee of Catalonian Dental Association
- Vice President of the Scientific Committee of AFO (Ibero-American Association of Orthodontists)
- Dr. Echarrri is also a boarding member and a chairman of the 1st International Congress of the World Society of Lingual Orthodontics (WSLO) and a delegate at the WFO (World Federation of Orthodontists)
- Dr. Echarrri is a collaborating professor in Orthodontic Masters Studies at the University of Barcelona and Director of the Ortodoncia Clinica Journal
- He is a former President of the European Society of Lingual Orthodontics (ESLO) in 2002-2004
- He has memberships in over 14 associations and societies in the Orthodontic industry
- Dr. Echarrri has published 7 books, including his most recent accomplishment "Microimplants and Orthodontics"
- Written over 75 articles in orthodontic journals in eight countries

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Ancor Pro™
 Temporary Orthodontic Anchorage System

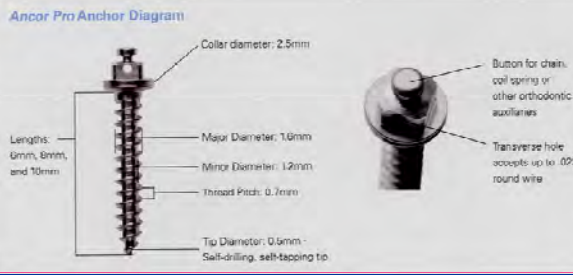



(Approximately \$1,400.00)

Latchlock Driver
Long Driver Insert
Short Driver Insert
Drill
Thumb Wheel
Anchors (12)
Hand driver
Ratchet (Optional)
X-Ray Placement Guides (12)

Ancor Pro™ TAD


Ancor Pro Anchor Diagram




Collar diameter: 2.5mm
 Major Diameter: 1.6mm
 Minor Diameter: 1.2mm
 Thread Pitch: 0.7mm
 Tip Diameter: 0.5mm - Self-drilling, self-tapping tip
 Button for chain, coil spring or other orthodontic auxiliaries
 Transverse hole accepts up to .027" round wire

Lengths: 6mm, 8mm, and 10mm

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Ancor Pro Anchors
 Available in three sizes: 6mm, 8mm, and 10mm. (See details on Ancor Pro Anchor diagram)




Latchlock Driver
 Used with standard hand pieces to insert Ancor Pro Anchor. Has internal retentive feature to hold Ancor Pro Anchor securely. Must be used at a very slow speed (10-20 rpm). Can be used to remove Ancor Pro Anchor with motor set in reverse.



Thumbwheel
 Used with long or short driver insert. Provides good grip to start Ancor Pro Anchor in bone.




Drivers
 Fit screwdriver, manual handle and ratchet wrench. Available in short-6mm and long-12mm. Have internal retentive features to hold Ancor Pro Anchor securely.



Hand driver


Used with long or short driver insert. Can be used for insertion, final seating, or removal of *Ancor Pro* Anchor.



Ratchet (Optional)


Used with long or short driver insert. Can be used for insertion or final seating of *Ancor Pro* Anchor. Arrow faces away from patient to insert *Ancor Pro* Anchor. Arrow faces toward patient to remove *Ancor Pro* Anchor.

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Drill

Used for drilling through soft tissue and cortical bone. Largest diameter is 2.4mm - 0.1mm less than collar diameter to ensure snug soft tissue around *Ancor Pro* Anchor.




X-Ray Placement Guide

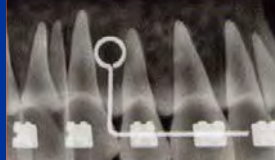
Used to mark the *Ancor Pro* Anchor insertion site easily and accurately.



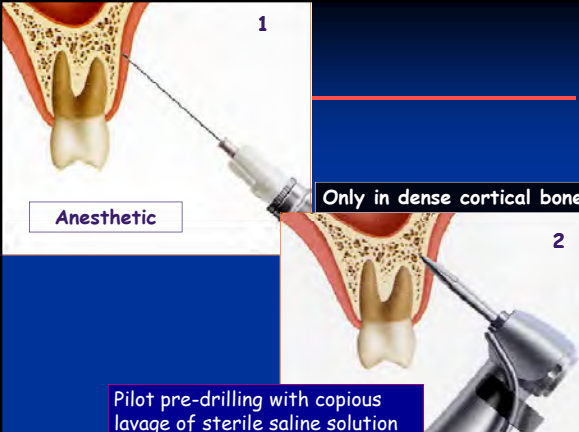
Placement of TAD's



Secure the Anchor Pro™ placement guide



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1

Anesthetic


Only in dense cortical bone

2

Pilot pre-drilling with copious lavage of sterile saline solution

Removing the TAD

3




Screwdriver Thumbwheel Ratchet Hand piece

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Manual Insertion

4a



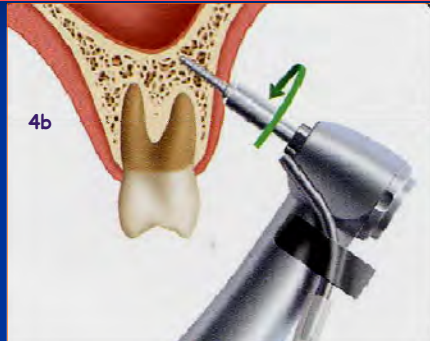
Hand driver Thumbwheel Ratchet

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Mechanical Insertion 10 - 20 rpm, 20 NCm

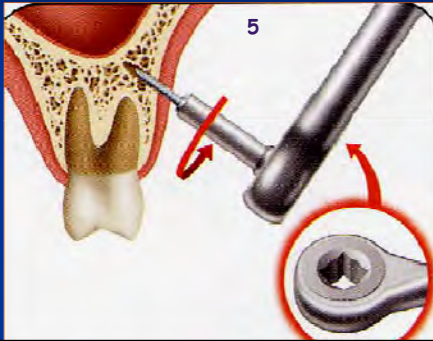
4b



20

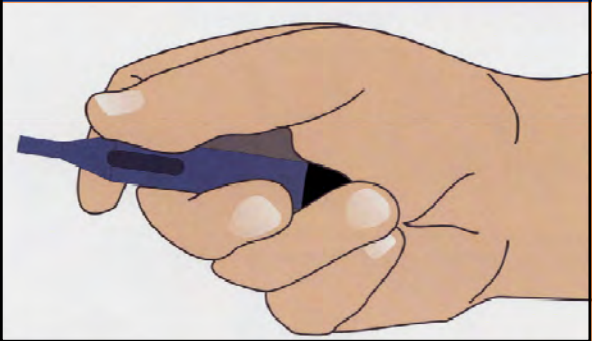
Removing the TAD

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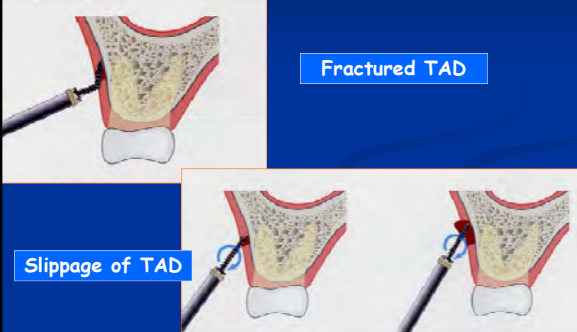
Correct Position of the Hand driver



Pre-drilling Recommended When the Cortical Bone is Dense

Fractured TAD

Slippage of TAD



Benefits of TADs

- Easy insertion and removal
- Absolute anchorage
- No cooperation is needed
- Reduction of treatment time
- Alternative to appliances and head gear
- Can be used in growing patient
- Immediate loading...

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Indications for TADs

- Closing and opening spaces
- Up righting teeth
- Intrusion and forced eruption of teeth
- Distalization of teeth
- Correction of canted occlusal plane
- Surgical fixation
- Absolute anchorage
- Movement of teeth "en mass"...

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Contraindications of TADs

- Systemic diseases
- Osteoporosis and osteomyelitis
- Radiotherapy of the head
- Active oral infection and periodontitis
- Insufficient space for TAD's
- Thin and deficient cortical bone
- The patient who does not accept TAD
- Metabolic disorders, metal sensitivity

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Torque Resisting Force of Absoanchor® TAD, Prior to Separation

Item	Torque Resisting Force (N CM)
1211	10.35
13	13.00
1312	16.84
1413	17.84
14	23.00
1413	27.08
1514	28.17
1615	32.02
1716	43.56
1817	75.00

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Surgical Protocol for the Insertion of TADs

Sterile instruments are ready

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Patient FAQ

What is a TAD?
 A TAD is a miniature screw that we push into the mouth. It serves as an anchor for moving specific teeth in the most controlled and predictable way possible. TADs are made of a strong, non-toxic, titanium alloy. They eliminate cumbersome appliances (i.e., headgear) and allow us to treat certain cases that were nearly impossible before this technique was refined. TADs also allow us to treat cases better and faster than ever before. TADs are truly revolutionizing orthodontic treatment.

How exactly is the TAD positioned?
 After numbing the area where the TAD is to be placed, we use specific pressure to insert it through the gum and into the bone between your teeth.

Having a TAD placed sounds painful. Should I be worried?
 Absolutely not! While it's normal to assume that the procedure will be painful, it is actually painless. You may feel some slight pressure during the insertion but no pain. The entire procedure takes only a few seconds.

Will it hurt after the anesthesia wears off?
 No. Some patients say they feel a little pressure for a short period afterward. Only a few patients have reported needing to use our over-the-counter medication such as acetaminophen or ibuprofen.

What if it aches the next day?
 There is no call for alarm. Aching associated with new teeth movement is not only normal, but is expected. However, if you have concerns, simply call our office and we'll make an appointment to see you. We'll probably suggest that you take an over-the-counter remedy to lessen the ache.

What if the TAD or its attachment causes an irritation inside my cheeks or lips?
 For immediate relief, you may be able to cover the attachment that is causing the irritation with a cotton swab or a small amount of wax. Call the office on the other hand number we provide and we'll give you instructions and/or make an appointment to see you.

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Patient FAQ Cont'd

What if the TAD comes loose?

On occasion, a TAD might become a little loose. In most cases this minor mobility is nothing to be concerned about; however, if you feel the TAD is excessively loose, or it is causing you discomfort, call the office and we'll make an appointment to see you to determine if the amount of give is normal.

How long will the TAD need to stay in place?

As the name implies, the anchorage device is temporary and is typically removed in a few months when it is no longer needed to assist in tooth movement.

Will it hurt when you remove it?

No. Before we remove it we'll place numbing gel around the TAD and then back it out gently. The entire process takes only a few seconds.

Has anyone ever heard of TADs before. Are they new?

Not really. Dentists have used TADs since 1993 and oral surgeons and orthopedists have used miniature screws like this for decades longer. Recent refinements in the devices and the procedures for their use have propelled the application of TADs to a heightened level in orthodontics. With TADs, orthodontic treatment options have never been greater. We are proud to be at the forefront of this exciting technology and feel confident that your experience with it will be comfortable and the results exemplary.

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Informed consent for placement of Temporary Anchorage Device (TAD)

Name of the patient _____

I consent for myself (or on behalf of my dependent) proposed treatment by Dr. _____ which includes the use of TADs (mini screws) to help with positioning of teeth.

I understand that TADs will be used as an anchor to help stabilize, or for movement of a tooth or group of teeth. It was explained to me that TADs will be inserted into my palate, behind my last tooth or into the space between upper and lower teeth.

It was explained to me that the TADs will be inserted with the aid of the local anesthetic. The insertion procedure was explained to me thoroughly and I understand that the absolute success of all TADs cannot be guaranteed.

Some complications may occur:

1. Discomfort, mild pain and swelling in the area
2. Inflammation or infection of the insertion site
3. Mobility or loss of TAD
4. Penetration of TAD to the maxillary sinus
5. Injury of the nerve
6. Fracture of TAD
7. Damage of the dental roots or adjacent structures

I understand the content of this informed consent. I had the opportunity to ask questions and all of my questions were answered.

Date: _____

Signature of the patient _____ Signature of the parent/guardian _____
Name of the parent/guardian _____

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Information for the Patient:

TEMPORARY ANCHORAGE DEVICES (TADs)

TADs are mini screws that are inserted in the maxilla or the mandible and they serve as support to the movement of the teeth to be corrected during orthodontic treatment.

For effective dental movement, it is necessary to have a point of support, and occasionally the rest of the teeth do not offer sufficient resistance. TADs are made of completely biocompatible material such as titanium, which is used for dental prosthesis or in other medical sciences such as traumatology.

The procedure of insertion is very fast and painless, and is carried out with local anaesthesia. However, in most cases, it can be done without anaesthesia. Smokers or mouth breathers are more prone to infection or inflammation. It is very important to maintain good oral hygiene and to also use antiseptic mouthwash after eating.

If the visible part of TADs provokes discomfort in the lips, cheeks or tongue, it can be covered with wax or dental silicon. If you notice inflammation around the micro implant or any mobility, please contact our office.

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Placement of TAD

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Unsafe Areas for Placement of TADs

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Unsafe Areas for Placement of TADs

Maxillary Sinus

Mental Foramen

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Placement Guide

Bras wire Bonded SS wire

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Disinfection

PERIDEX

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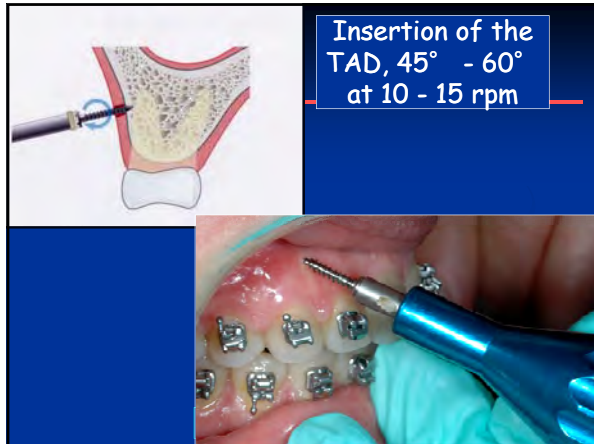
Topical Anesthetic

Infiltration with a Rubber Stop on the Needle

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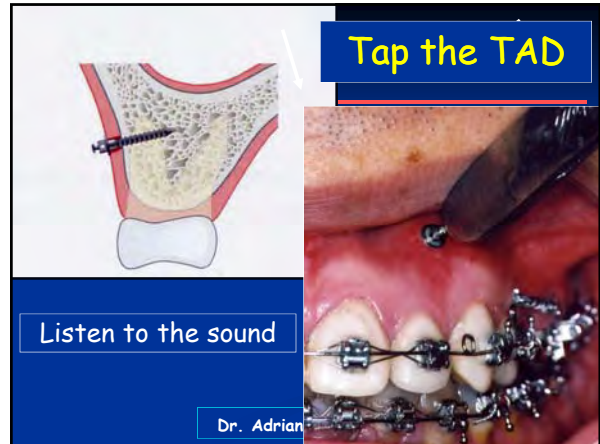
Measure the Thickness of Mucosa

One may use a periodontal probe, (Michigan) with a rubber stop, to measure the thickness of mucosa



Insertion of the TAD, 45° - 60° at 10 - 15 rpm

This slide shows a diagram of a tooth with a TAD being inserted into the alveolar bone at an angle. Below the diagram is a clinical photograph of a patient's teeth with braces, where a handpiece is being used to insert a TAD into the gingival tissue.

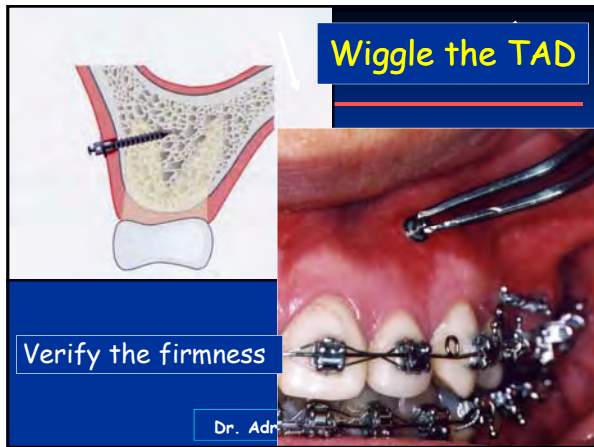


Tap the TAD

Listen to the sound

Dr. Adrian

This slide features a diagram of a TAD being tapped into the bone. The clinical photograph shows a handpiece tapping the TAD, with a close-up of the tip of the handpiece against the gingiva.

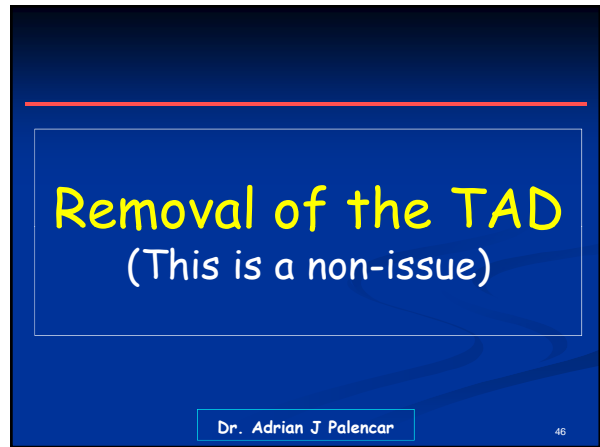


Wiggle the TAD

Verify the firmness

Dr. Adri

This slide shows a diagram of a TAD being wiggled in the bone. The clinical photograph shows a handpiece wiggling the TAD, with a close-up of the tip of the handpiece against the gingiva.



Removal of the TAD
(This is a non-issue)

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This slide is a text-based slide with a blue background and white text, stating that the removal of the TAD is a non-issue.



Disinfection

PERIDEX

This slide shows a clinical photograph of a patient's teeth with braces. A white gauze pad is being held against the gingiva by a pair of tweezers. A small box labeled "PERIDEX" is visible in the top left corner.

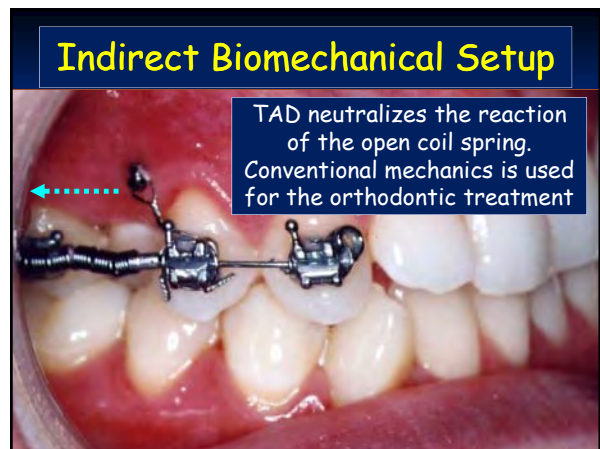
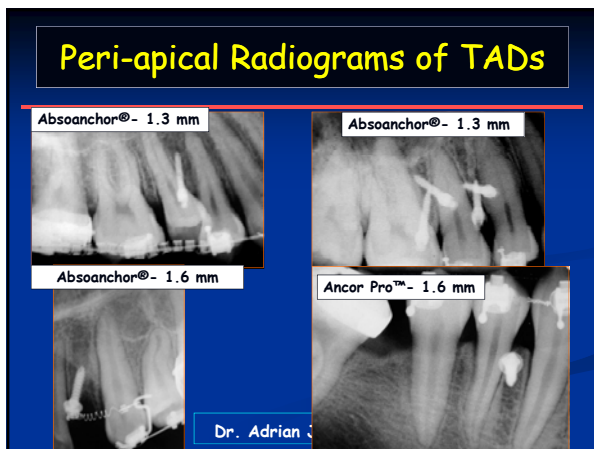
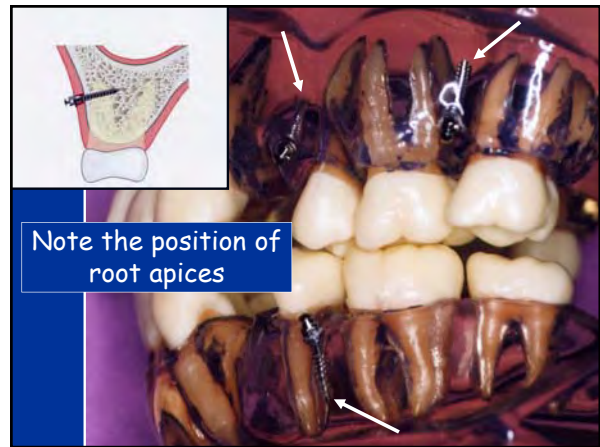


Topical Anesthetic

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This slide shows a clinical photograph of a patient's teeth with braces. A cotton swab with a blue substance is being applied to the gingiva.



Direct Biomechanical Setup

The force from the closing coil spring is applied closer to the center of resistance of the tooth

Bondable Power arm for self-ligating brackets

Giancatti, Greco, JCO - August 2008, 675

Dr. A

Lingual intra to control rotation

Dr. Adrian

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Direct Biomechanical Setup

Intrusive force applied to the arch wire from the closing coil spring

Four TADs

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Power Arms are Soldered to the Molar Bands to Decrease the Mesial Moment on the Crown




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Soft tissue shield - 018x025 SS




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Direct Biomechanical Setup




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Bonded Placement Guides



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MN, Ancor Pro™, 1.6 x 8.0 mm

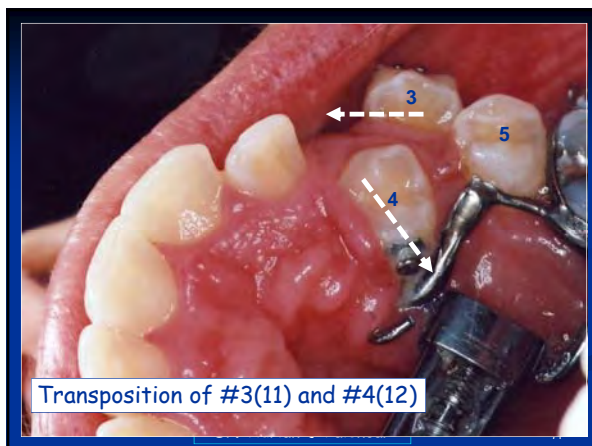
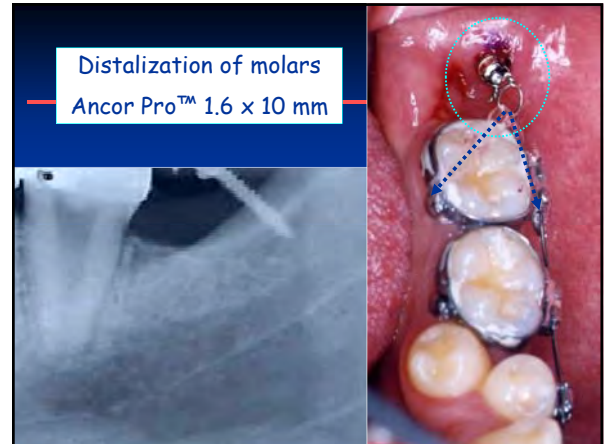
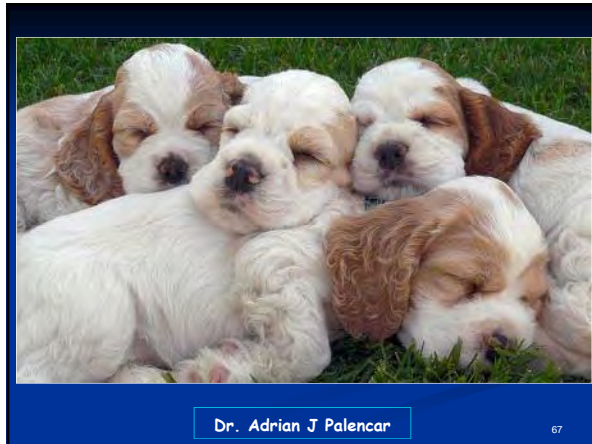


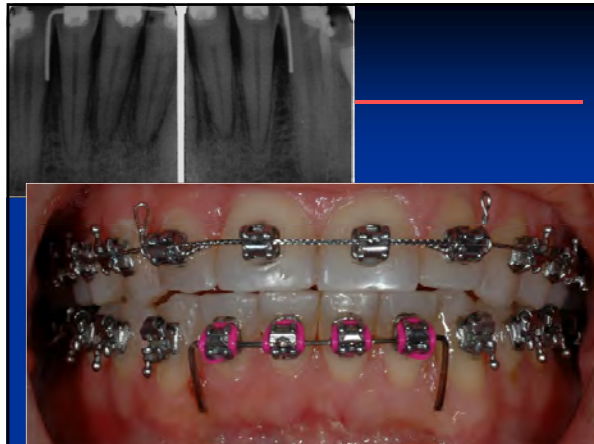
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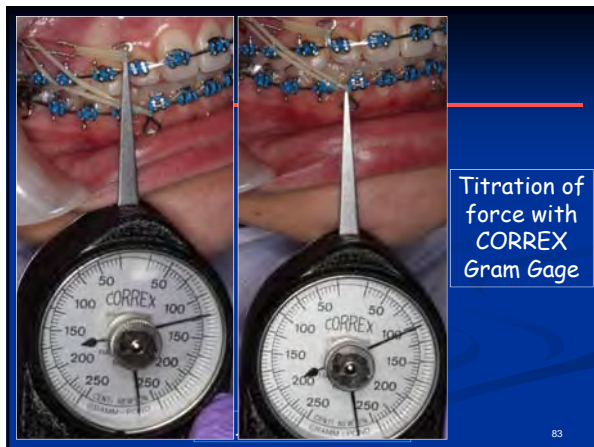
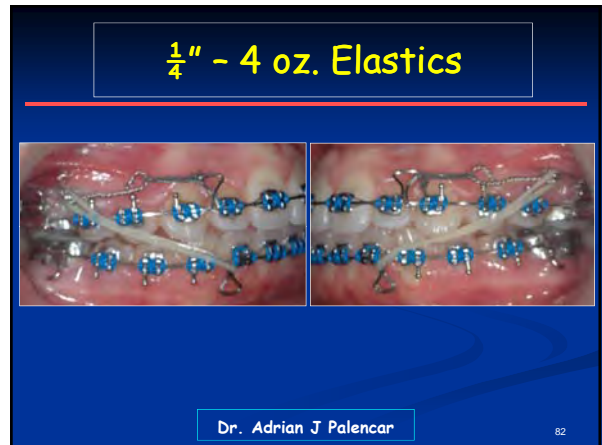
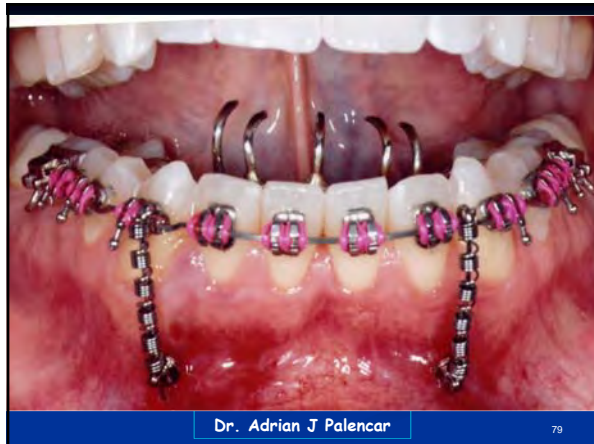
MX - AbsoAnchor®, (2x) 1.3 x 9.0 mm. MN Ancor Pro™, 1.6 x 8.0 mm



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Failing TAD???

- Inform the patient/parent before the treatment
- Inform the patient/parent that this may happen
- Assure the patient/parent that this is a non event
- Alleviate the fear and apprehension
- Promise to replace the TAD “pro bono”

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Failing TAD

Absoanchor®
1.3 mm x 7.0 mm 86

The Amount of Applied Force

Use a force measuring device COREX

DO NOT EXCEED 200 GRAMS

TAD (1.6 mm) can only take 400 - 500 grams in the best cortical bone

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The Amount of Applied Force

150 - 200 grams for translation

Only 50 grams for intrusion

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Titration of Force

Medium - 150 grams NiTi Closing coil spring

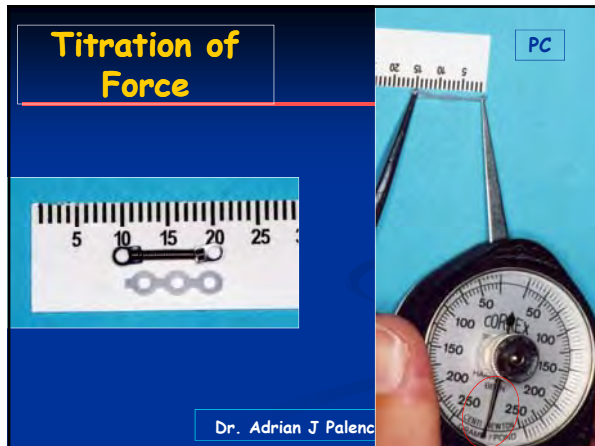
Power chain

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Titration of Force

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Titration of Force



PC

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Conclusion The Presenter's Preference

Ancor Pro™ 1.6 mm x 6.0 and 8.0 mm lengths are generally used.

Where there is too thick attached gingiva or in the muco-buccal fold 10.0 mm length is used.

Where there is too dense cortical bone, i.e. Zygomatic process or Oblique ridge, pre-drilling should be considered.

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Thank you and See you Again



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