

# NON-COMPLIANT MECHANICS FOR A CLASS II SUBDIVISION EXTRACTION PATIENT WITH SMART WIRES

By Ravindra Nanda BDS, MDS, PhD • Piero Palacios DDS, MDSc • Flavio Uribe DDS MDSc  
Division of Orthodontics, School of Dental Medicine, University of Connecticut, Farmington, Connecticut

Anchorage control is one of the major treatment goals in patients with class II malocclusions undergoing premolar extractions. It is conventionally accomplished by increasing the number of teeth in the anchor segment, headgear, intermaxillary elastics and

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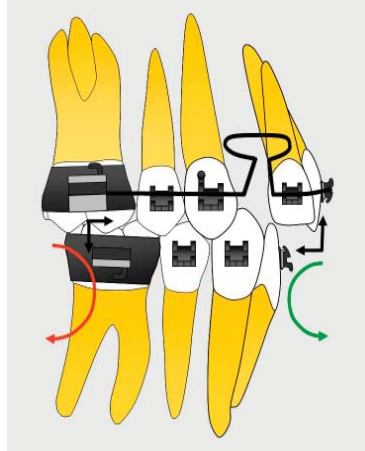
temporary anchorage devices. Retraction of canines by sliding mechanics is often associated with deepening of the overbite, distal tipping of the canine, and friction, which may result in anchorage loss. In last few years we have developed the concept of ‘Smart’ orthodontic wires. These wires have predetermined bends or and/or activations to deliver predictable orthodontic forces.

One of the simplest methods used to simultaneously reinforce the anchorage and prevent the side effects often associated with the sliding retraction mechanics is the *Connecticut Intrusion Arch™* (CIA).

By ligating an intrusion arch on top of the main archwire on

the incisors, one can solve the anchorage problem. The intrusion arch delivers an intrusive force on the incisors and a tipback moment on the molars, thereby, allowing canine retraction with minimal deflection on the main wire.

Once the canine has been retracted, the four incisors can be retracted by a *Connecticut Nitanium Arch™* (CNA) Mushroom Loop Archwire (.017x.025 or other rectangular sizes). The mushroom loop is opened 4-5 mm outside the mouth which automatically gives a moment (torque) on the anterior part. Opening of the loop also causes a root lingual



torque in the posterior part of the wire which should be taken out by making sure that the wire is flat. A moment is placed posterior to the loops by either bending the wire (gable bend) or using a sweep (like reverse curve) with the thumb finger. Based on the anchorage requirement, the posterior bend can be increased or decreased. A 35 to 45 degree bend is desirable

in critical (A - anchorage) patients. If anchorage is less critical, the magnitude of the bend can be reduced. The wire is engaged in all the brackets and then it is pulled back distal to the molar tube until the loop is opened as much as it was pre-activated outside the mouth plus 1 mm. The patient is



*Once canine retraction has been achieved, a CNA Mushroom Loop Archwire (Ortho Organizers) with differential moments, is placed, activated 4 to 5 mm and cinched in the back to retract upper anterior teeth. And is reactivated every other month to allow appropriate incisors torque.*

now seen every five weeks.

The *CNA Mushroom Loop Archwire* can also be ligated directly into the auxiliary tube without attaching it to the premolars and canines. In this situation, the posterior teeth should have a buccal segment and a palatal arch to prevent mesial-in rotation of the posterior segment.

The *CNA Mushroom Loop Archwire* is not reactivated for at least 4 visits. Due to the lower moment to force (M/F) ratio at the initial activation (7:1), the first four incisors will control tip, then translate as the M/F increases (10:1) and then

automatically the roots will move lingual due to an increase in M/F ratio (12:1 and above). After the space closure, the patient will not require time consuming incisor torque or root uprighting. When the space is fully closed, the loop should be left in the mouth for at least one to two visits so that moment can express in the form of final root uprighting. The patient is then finished with .018x.025 *CNA Mushroom Loop Archwires*.

A patient is presented where a piggyback intrusion arch was used during retraction of canines. Subsequently, upper *CNA Mushroom Loop Archwire* was used to retract the lower incisors.

Following wire sequence can be used for extraction patients.

#### 1. Initial Wire

- .016 *Black T™* **or**
- .016 Advanced Kinetix

#### 2. Canine Retraction

- .016x.022 *Nitanium®* **or** Stainless Steel
- Wire

.016x.022 **or** .017x.025 Long *CIA* **or** *CNA* preformed Connecticut Intrusion Arch as a piggyback wire attached to incisors only

#### 3. Incisor Retraction

- .017x.025 (or other rectangular size)
- CNA Mushroom Loop Archwire*

#### 4. Finishing Archwire

- .018x.025 *CNA Beta III* Upper and Lower Archwires

Before



After

