Archwire Sequence

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Archwire Sequence

Different situations require different sequences
Initial tie in techniques

• Traditional tie in- .016 niti, packing coil to gain space for blocked out teeth
• Evaluate space gained by looking from the occlusal
• After space is gained, engage those teeth
Initial tie-in

- Wire used- .016 niti
- Use elastic ties where the wire fits passively into the slot
- Use steel ties where wire does not fit passively into the slot
4 week recall

- Remove all steel ties
- Replace steel ties with
  - Elastic ties if the wire fits passively into the slot
  - Another steel tie if wire is still not passive
Initial tie-in, continued

• Continue this every month until no steel ties remain
  – Usually takes about 1 month for every 2mm of pretreatment crowding

• When the .016 niti is tied in with all elastic ties, it is time to begin the wire progression
Blocked out teeth

• Create space by packing coil
  – Pack 2mm more coil than the distance between the adjacent brackets

• At the 4 week recall, if
  – There is enough space for the tooth, tie it in
  – There is not enough space for the tooth, pack more coil (a length 2mm longer than used the previous month) and reevaluate in 4 weeks
Coil packed (1), repacked (2), tooth engaged with steel (3), tooth engaged with elastic (4). The upper arch is now ready for the wire progression.
Beginning Treatment

• First 3-6 months of all full bracketed cases
  Begin in .016 niti
  About 1 month for every 2mm of crowding
  Pack coil to make space in the arch for blocked out teeth
How long in niti?
How long in niti?
Packing coil

- Use .016 niti with .010x.030 stainless steel coil
- Coil is 2mm longer than distance between adjacent brackets
- After 1mo evaluate space created
  - if enough space exists, engage tooth
  - if space is lacking, pack a 2mm longer coil, retie and evaluate in 1 month
Which teeth can’t be engaged?

- Where is coil packed?
- How long is each portion of coil?
Initial Bracketing
1 Month Later
2mm longer coils
1 Mo Later
Teeth bracketed and engaged
Archwire sequencing alternatives

- Severe crowding-normal bite depth
  - 012 niti bent back (flame tip)
  - elastic tie over molar tube
  - 6 week appointment intervals
    - “I don’t want to waste your time.”
  - 012/016 Niti tandem
    - full slot gives early torque control
  - 019x025 HANT
Alternate initial tie-in

• Begin with .012 niti
  Totally engage wire into slot
  No coils needed
  Wait 8 weeks
Why .012 Niti?

• Answer- More flexible wire means more efficient slot engagement.
• Easier to get complete engagement with lighter wire.
Elizabeth, 12 week interval
.012 niti, no coils, use x ties

pre-treatment

after 6 weeks

after 12 weeks
Other treatment option
Open coil to create space

Patrick (Elizabeth's older brother)
Initial bracketing

0.016 niti coil to gain space to aid rotation
4 weeks later

Coil packed over 1 tooth
4 weeks later (8 weeks total)
4 weeks later (12 weeks total)
16 weeks out

Too much space created, chain to close space
Elizabeth 3 appts-12 weeks (l)
Patrick 6 visits-20 weeks (r)
20 weeks total-finally!!
My Opinion

• The best unloading arch wire is .012 niti
• I don’t like heat activated niti (HANT) round wire for initial leveling and aligning
• I do like rectangular HANT for torque control, but we’ll discuss that later.
Wire sequencing - general comments

- 1st wire-.012 nitanium with x-ties and brackets positioned into the rotations
- Wait 6-8 weeks
- Rotations or crowding remaining-tandem .012 and .016 nitanium
- No rotations or crowding- go to .014 stainless steel (deep bite cases) or 019x025HANT (normal bite depth)
Initial tie-in with .012 niti
6 weeks later-retie .012 niti
6 weeks later - .012 niti
12 weeks of .012 niti
Upper Arch - no rotations - use .019x.025 nitiium
Lower Arch - stubborn rotations - tandem .012/.016 nitiium
.012 niti (top)
6 weeks later
.012/.016 niti (bottom)
3 months later - removal
Treatment time 11 months
Question: Where did the space come from?
USDI Recommended wire sequence

- Step 1 Preparation
  - .016 thermal niti
  - .016 stainless steel

  Purpose- Level, align and rotate
Step 2- Relate

- Wires- .020 stainless steel with posts
  Purpose- correct overbite, overjet, midline and anterior spacing
Step 3- Consolidate

- Wires- .020 stainless steel with posts
  Purpose- close posterior space
Step 4- Finishing

- Wires- 019x025 HANT, Niti classic or stainless steel
  Purpose- correct root torque
That is a lot of wire progressions!!
What one should I use??
It Depends!!
Let's discuss advantages and disadvantages of each technique.
USDI Protocol

• Advantages
  Very simple
  Useful in cases where not a lot of bite opening, arch width changes, or other mechanics are necessary
  Used by practitioners who use a lot of functional appliances

• Disadvantages
  Very limited mechanically
  Poor torque control (note: this is not a disadvantage in cases that don’t require a lot of torque control)
Piggyback Protocol

- Advantages
  Good for rotations and severe crowding
  Good for establishing torque early in treatment

- Disadvantages
  Not good for bite opening
  Not good for changing arch widths
Full stainless steel protocol

- Advantages
  Good for bite opening
  Good for cases that require a lot of mechanics (extraction cases, arch width management)
  Good for cases where functionals are not used

- Disadvantages
  Long treatment time
  Steep learning curve involving the nuances of fixed mechanics
Wire progression

• Begins after initial leveling is finished
• The use of progressively larger arch wires in an effort to gain control of the teeth by filling the slot
• Different progressions are used for strong and weak muscled patients
  – Low load deflection wires help prevent bite opening in patients with open bite tendencies
Wire progression goals

- Gain control of the teeth by filling the slot
- Get bite open to the desired level
- Establish arch width
Wire Sequence

- Strong muscled patient
  - .016 niti
  - .014 stainless steel
  - .016 stainless steel
  - .020 stainless steel
  - .019x.025 nitanium
  - .019x.025 stainless steel

- Click to add an outline
Teeth Aligned
Begin Wire Progression

.014 stainless steel Wires coordinated
.016 stainless steel wires coordinated
.020 stainless steel
Wires coordinated