

Unraveling teeth in Stage I of Tip-Edge

Most dentist who do tip-edge orthodontics are familiar with the drawing of stage I presented in figure 1. A typical way of starting a tip-edge orthodontic case is to place molar tubes on the first molars, bracket the anterior teeth, and use a .016 stainless steel wire with bite opening bends to correct an overbite. The idea behind this is to push off the first molars to intrude the anterior teeth with a light 2 once force. The patient is instructed to wear a 2 once, class II elastic to pull the upper anterior teeth posteriorly to correct any overjet and off-set the protrusive force of the .016 wire with anchor bends.

The problem is that in cases with severe anterior crowding, the dentist cannot get the .016 stainless steel wire to fit. The dentist must first unravel (or straighten) the anterior teeth before they can engage the .016 stainless steel wires. This article is intended to give some techniques for unraveling anterior teeth. The techniques in this article can be applied to the tip-edge as well as straight wire orthodontics.

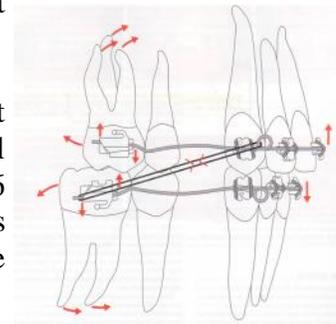


Figure 1

ARESENOL

Wires

There are several wires which can be used to unravel teeth.

1. .016 Stainless steel wires
2. .016 or .014 Nickel titanium (Niti) wires
3. .016 stainless steel wires looped wires
4. Combinations of these

Auxillaries

1. Standard modules
2. Ligature wires
3. .016 zing string
4. E-links

Techniques

1. Niti wires
2. .016 looped wires
3. Piggy back– .016 Stainless steel wires with a .014 Niti wire

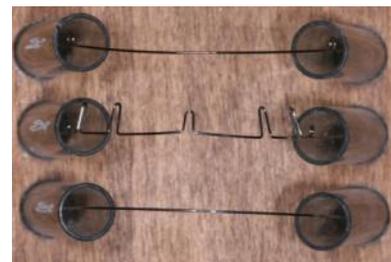


Figure 2

NICKEL TITANIUM WIRES (NITI)

I often advise the students in our orthodontic classes, “When in doubt, start with a Niti wire”. Niti wires are very flexible. When you bend them, they always want to go back to their original form. These wires are used to unravel teeth. Since they cannot hold a bite opening bend, they cannot be used to correct an overbite or underbite. With tip-edge, we keep the patient in a Niti wire only until their teeth are straight enough to go to a .016 stainless steel wire.

Niti wire– Example 1 (Figure 3-5)

Patient was a first bicuspid extraction case.



Figure 3

Of course, we could not fit patient with stainless steel wires, so we placed upper and lower .016 niti wires. Note– we chose not to engage the upper right lateral into the wire because would put too much torturing force on that tooth. Rule of thumb– never put more a 90 degree or more bend in a niti wire.



Figure 4

Pearl– When a canine is on top of lateral, place an e-link from the canine to the hook on the molar tube. You do not have to engage the lateral if it is crowded out. First objective it to get the canine into place.



Figure 5

Niti wires– Example 2 (Figure 6-8)
Patient a first bicuspid extraction case.



Figure 6

Placed upper .016 and lower .014 niti wires to unravel teeth. Will leave in these wires until straight enough to move to .016 stainless steel wires.



Figure 7

Pearl– Placed button on upper left canine to move it into place with an e-link from the canine to the molar tube on the upper left first molar. Note– At this point, we do not have to engage the canine into the niti wire. The first objective is to move the canine down and distally into place.



Figure 8

Niti wires– example 3 (Figure 9-13)

Class I malocclusion

First bicuspid extraction case

(Patient treated by dentists taking a 2-years, hands on class in Austin, TX)



Figure 9

Patient placed in upper and lower .016 niti wires. Note-not enough room to bracket upper laterals



Figure 10

Patient six weeks later. Placed bracket an upper laterals. Kept patient in .016 niti wires



Figure 11

When teeth straight enough, moved to .016 stainless steel wires. Used normal stage I tip-edge mechanics. Since no bite to open, wires were placed flat.



Figure 12

Finished Case



Figure 13

LOOPED WIRES

These wires are made of .016 stainless steel. They are great for situations where the dentist wants to open a bite and procline teeth at the same time.

Fitting a looped wire (Figure 14-18)

If a dentist wishes to use a looped wire, the dentist can take a .016 stainless steel wire and bend the loops or buy pre-bend looped wires from Tp Orthodontics. The pre-bend looped wires come in sized form 10-25.



Figure 14

To size a looped wire, the dentist measures the width of a central and lateral incisor. If the central and lateral are each 6 mm wide, the dentist would use a number 12 looped wire. I find this a good starting point. I recommend trying the wire in before using it. When the canine circles touch the mesial of the canine brackets, the wire should bow 1-2 mm in facially to the lower incisors which are to be proclined. If the wire does not bow out enough, the dentist may choose to use a larger looped wire. A wire which bows out too much would indicate a smaller wire.



Figure 15

Figure 16 shows the proper buccal flaring of a looped wire.



Figure 16

Often the loops in the wire must be bent so they do not poke the patient in the gums. A looped bending plier is good for this task.



Figure 17

The looped wire is put into place. Note that tooth # 24 was too far lingual to be engaged with a module. A ligature wire was used instead. The tips of the loops were bent buccally, so the wire would not poke the patient in the gums.



Figure 18

LOOPED WIRES

Looped wires– Example 1 (Figure 19-20)

Patient had an overbite plus crowding of lower anterior teeth. We wanted to open bite plus procline the lower anterior teeth. A upper .016 Stainless steel wire was used in the upper arch and a .016 looped wire was used in the lower arch. Each wire had bite opening bends. The patient was instructed to wear 2 once, class II elastics.



Figure 19

As soon as the lower teeth were straight enough, the looped wire was replaced with a .016 stainless steel wire. Normal stage I tip-edge mechanics were continued until stage I objectives were met.



Figure 20

Looped wires– Example 2 (Figure 21-24)

Non-extraction case. Patient is slightly dental and skeletal class III with an anterior crossbite. (Patient is being treated by dentists taking a 2-year, hands on class in Austin, Texas)



Figure 21

Patient placed in upper and lower .016 niti wires because that was only wire which would fit.



Figure 22

Patient placed in an upper .016 looped wire to procline the upper anterior teeth. We tied in upper laterals with ligature wires.



Figure 23

Patient now in normal .016 wires to finish stage I of treatment. Note– patient wearing 2 once class III elastics. Wires were placed flat because no bite to open. We are now proceeding with normal stage I tip-edge mechanics.



Figure 24

Looped wires– Example 3 (Figure 25-29)

Patient class III malocclusion. When he came in, all he hit on was his second molars and anteriors. He was told he needed orthognathic surgery to correct his case. We agreed that orthognathic surgery would produce the best results. His parents did not want the surgical option. They were willing to accept compromised results. Our orthodontic workup indicated a non-extraction case.



Figure 25

Start case– We places an upper looped wire to procline the upper anterior teeth. A lower .016 stainless steel wire was placed. The wires were flat because there was no bite to open. Class III, 2 once elastics were used



Figure 26

When patients teeth were straight enough, .016 stainless steel wires were placed.



Figure 27

.Pre-stage III– Bicuspid were bracketed and patient was kept in .016 stainless steel wires. Note. Posterior bite settling because not patient not hitting on his anterior teeth



Figure 28

Finished case– braces were taken off early due to bad hygiene. Note– bite settled much better once anterior teeth were proclined. Patient can now eat a hamburger. (Patient was treated by dentist taking a 2-year, hands-on class in Austin, TX)



Figure 29

PIGGY BACK WIRES

This technique incorporates a .016 stainless steel wire on top of a .014 niti wire. The dentist can also use a .016 niti wire, but we find it easier to engage the .014 niti into the bracket slot. This technique is used when the dentist wants to open the bite and unravel the teeth at the same time. An alternative technique would be to use a looped wire. I mainly use this technique when the patient had a overbite of 80% or more along with severe anterior crowding. If the patient has less than an 80% overbite, I often start the patient in .016 niti wires alone and then move them to .016 stainless steel wires when their teeth are straight enough.

Examples of Piggy back technique

Piggy back– Example 1 (Figure 30-32)

Patient presented with about a 90% overbite and lower crowding.



Figure 30

In upper arch, we placed a .016 stainless steel wire. In the lower arch, tooth # 23 was too far lingual to engage in the stainless steel wire, so we place a .014 niti wire from canine to canine to move tooth # 23 facially. A .016 Stainless steel wire was placed on top of the niti wire. Both stainless steel wires have bite opening bends placed in them.



Figure 31

When tooth #23 was straight enough to engage it into the stainless steel wire, we removed the underlying niti wire.



Figure 32

Piggy back– Example 2

Patient presents with a class III malocclusion.
This was a second bicuspid extraction case.



Figure 33

We placed the patient in upper and lower .016 stainless steel wires with bite opening bends. In the upper arch, we piggy backed a .014 niti wire (a upper looped wire could have been used in this case also). Tooth # 23 was tied onto the lower wire with a zing string.



Figure 34

Patient in Stage II of treatment. Now in upper and lower .022 stainless steel wires.



Figure 35

Finished case. (Patient treated by dentists taking a 2-year, hands-on class in Austin, TX)



Figure 36

CONCLUSION

A dentist can follow some simple guidelines for wire selection in stage I of tip-edge orthodontics.

1. If teeth are straight enough, use .016 stainless steel wires.
2. Patients with severe crowding and not a severe overbite or underbite to correct, start with niti wires.
3. Patient with severe crowding and a severe overbite consider looped wires or the piggy back technique.
 - A. Use looped wires if you need to procline the anterior teeth
 - B. Use piggy back technique if proclining not needed.

Unraveling anterior teeth in stage I of tip-edge orthodontics can often be a bit tricky, but your patients will be amazed how there teeth will straighten when the correct technique is used.



Dr. Gerhardt practices general dentistry and orthodontics in Cedar Park, TX. Graduating from the University of Texas At Austin in 1988 and the University of Texas Dental School at San Antonio in 1992, he acquired two years of continuing education in orthodontics with the Academy of Gp Orthodontic in 1998 and gained Invisalign certificating in 2002. Dr. Gerhardt is an orthodontic instructor for the Academy of Gp Orthodontics, publishing numerous article on the subject. He is a member of the ADA, TDA, Capital Area Dental Association and the Academy of Gp Orthodontics.