

T.S.

Age: 43 Years – 1 Month

Diagnosis: Class I Nonextraction – Adult (severe crowding, very flat profile with tissue-grafting indications)

Background:

This case is very similar to the previous case of a 14-year-old. It is an excellent case to show the similarities of treatment time, mechanics, and treatment response between youth and adult treated with the new System. Treatment time for the 14-year-old was 14 months 2 weeks with 7 appointments after bonding while the adult was 15 months 1 week with 8 appointments after bonding. It is also an excellent case to contrast the impact of conventional higher-force orthodontics vs. lower-force/lower-friction orthodontics. A significant portion of treatment time and mechanics in this case was spent in low force/hi-tech archwires.

It is easier to contrast these two in the following outline:

Conventional High-Force Mechanics

- Extraction of 4 teeth.
- Higher force mechanics.
- Estimated treatment time 22-24 months or more.

Impact:

- Negative effect on profile and facial support.
- Possible long-term adverse impact on periodontium.
- Longer treatment time and greater patient discomfort.

Low-Force Mechanics

- Nonextraction.
- Estimated treatment time 14-16 months (Actual 15 mos – 1 week).
- Low-force mechanics.

Impact:

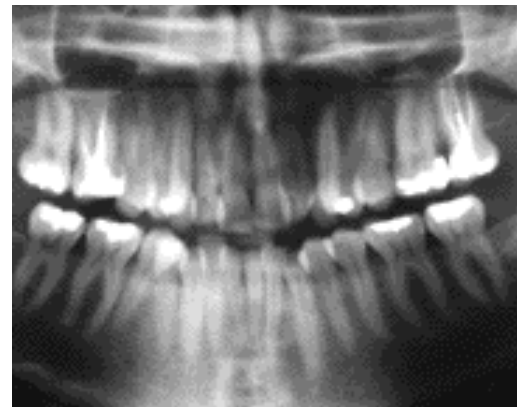
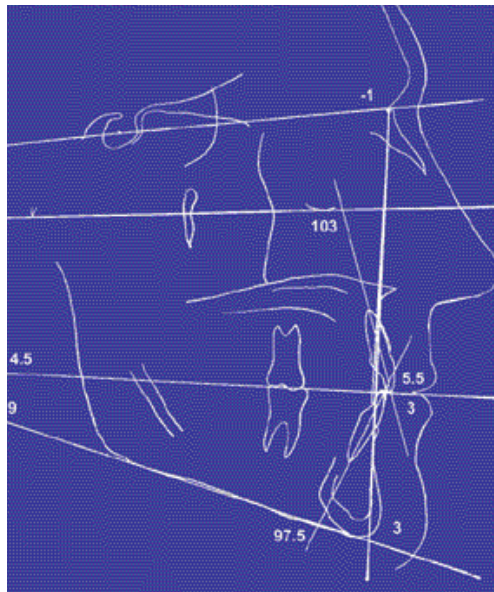
- Very positive impact on profile and face.
- Positive impact on periodontium.
- Shorter treatment time and less patient discomfort.
- Exceeds patient's expectations for orthodontics.

Facial Evaluation:

1. Flat facial profile.
2. Prominent nose.
3. Lack of lateral facial support.
4. Thin lips.
5. Deep nasolabial folds.

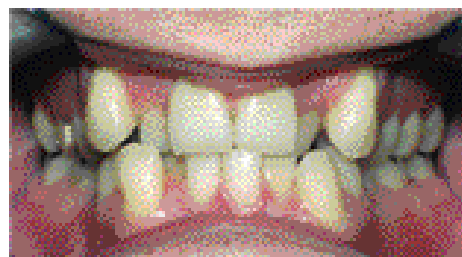
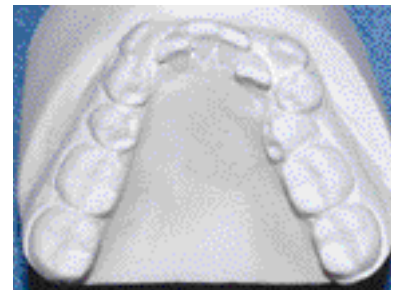


Pretreatment Radiographic Survey:



Dentition Evaluation:

1. Tendency toward Class III dentition with anterior crossbite.
2. Collapsed maxillary and mandibular arches.
3. Lack of arch length and width in maxilla and mandible.
4. End-to-end anterior occlusion – with incisal wear.
5. Compromised bone and tissue upper cuspids – will need connective-tissue grafts.
6. Long roots.



Treatment Objectives:

Goal:

Utilizing low-force mechanics – establish a new physiologic tooth position (*see Physiological adaptation*) balanced among the muscle of the face, tongue, bone and tissue.

1. Enhance facial profile.
2. Improve facial support.
3. Gain maxillary and mandibular arch length.
4. Establish good bone and vascular support (*see Bioadaptive response*) adjacent to upper cuspids prior to grafting.
5. Improve tongue position (*see Tongue influence*). Establish appropriate upper anterior tooth-to-lip relationship.

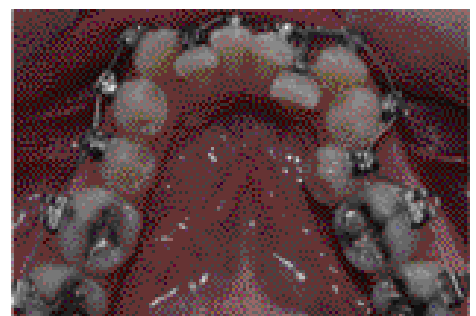
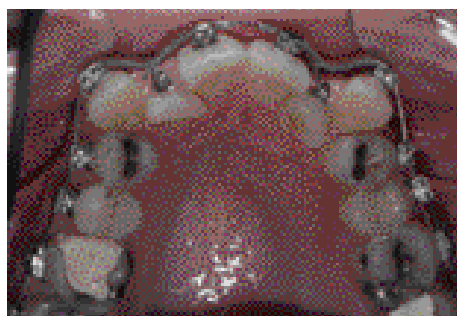
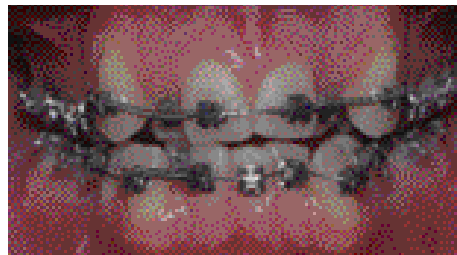
Treatment Sequence:

Special torques in appliance construction.

- Upper centrals +7° and laterals +3° (low-torque brackets). These brackets were chosen to keep incisors upright during unraveling and help prevent flaring forward.
- Lower central and lateral incisors -6° torque (low-torque brackets). These brackets were chosen to keep incisors upright during unraveling and help prevent flaring forward.
- Lower left cuspid +7° (high-torque brackets). This was chosen due to distal inclination. +7° will upright cuspid to net 0° position.
- Started with 1/2 bracket on upper laterals and lower right lateral.

Start:

1. Bonded maxillary and mandibular teeth 7 to 7.
2. Placed 1/2 bracket on upper lateral incisors and lower right lateral incisor, due to insufficient space for full-sized Damon brackets.
3. Lightly activated medium-light NiTi springs.
4. Tied 1/2 bracket lightly to archwire and spring.
5. Placed .014 NiTi SE (*see Initial wire*) in both arches. Note: Stops placed in anterior segment to permit full posterior expression of archwire during unraveling.



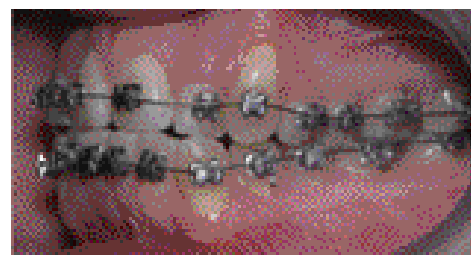
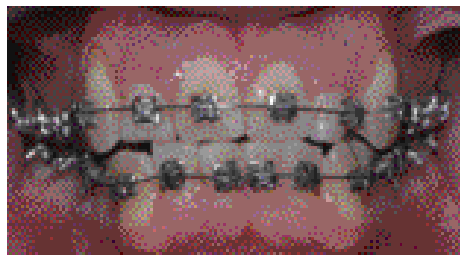
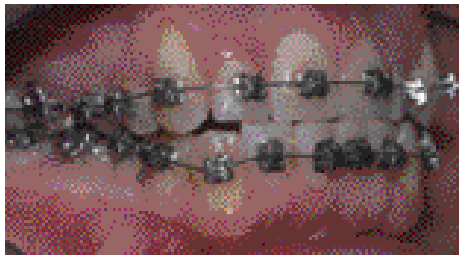
Appt. 1

2 months – 2 weeks:

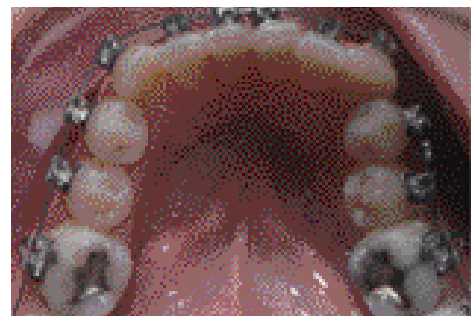
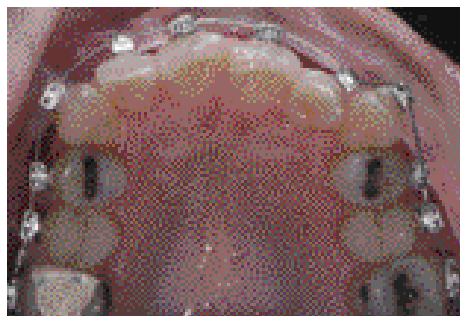
- Removed springs and engaged brackets.

Appt. 2

4 months – 3 weeks:

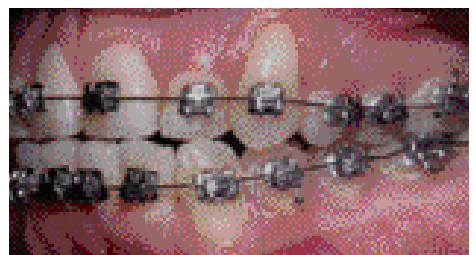
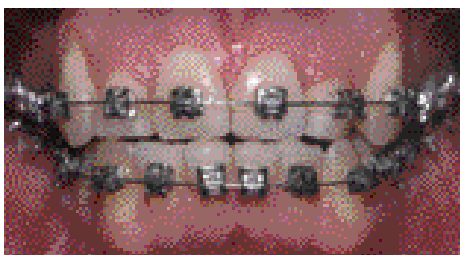
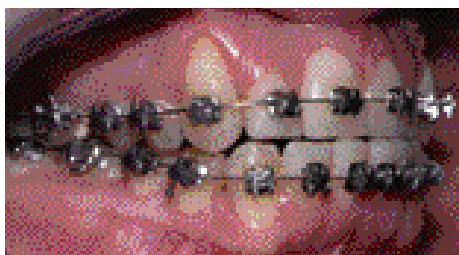


- Removed 1/2 bracket and placed Damon brackets on maxillary laterals and mandibular right lateral.
- Continued .014 NiTi.

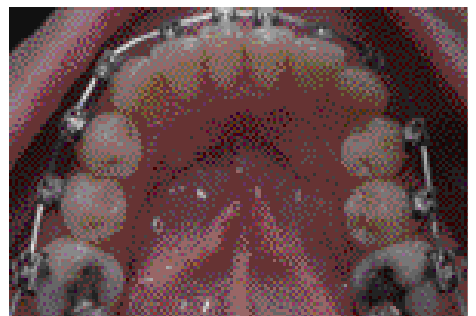
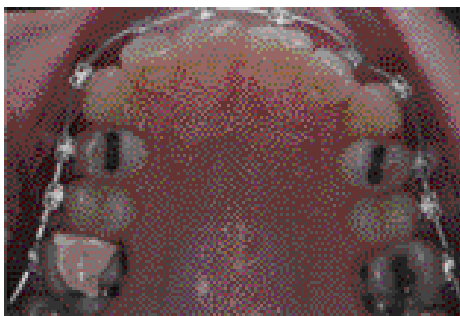


Appt. 3

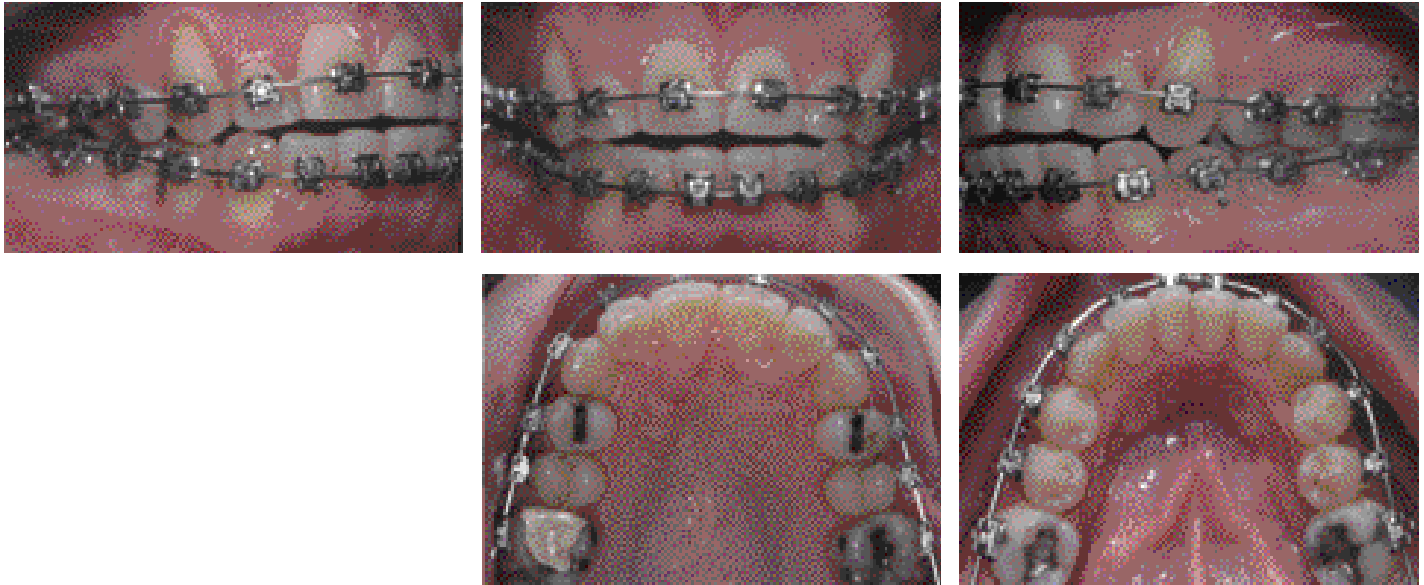
6 months – 1 week:



- Rebonded upper left lateral and lower left second bicuspid.
- Placed maxillary and mandibular .014 x .025 NiTi SE.
- Note lateral expansion in bicuspid area.
- Note upper cuspids ready for grafting as bone contours and vascularity are established. Grafting delayed due to insurance.



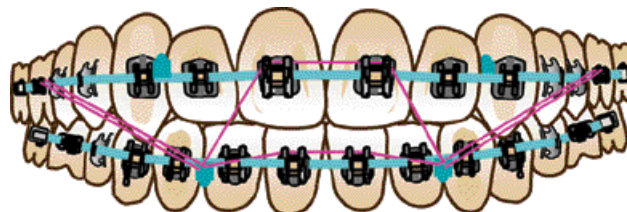
Appt. 4
8 months – 3 weeks:



- Placed maxillary and mandibular .018 x .025 NiTi SE.
- In crowded cases, an archwire sequence of .014 NiTi to .014 x .025 NiTi to .018 x .025 NiTi allows optimal force zone mechanics and allows passive insertion of stainless steel finishing archwire.
- Let high-technology archwires and the orofacial muscle complex establish the arch form. Referred for connective tissue grafts upper cuspids.
- It is important to establish healthy alveolar bone contours and blood supply prior to placing connective tissue grafts.
- Note bite opening to anterior open bite.

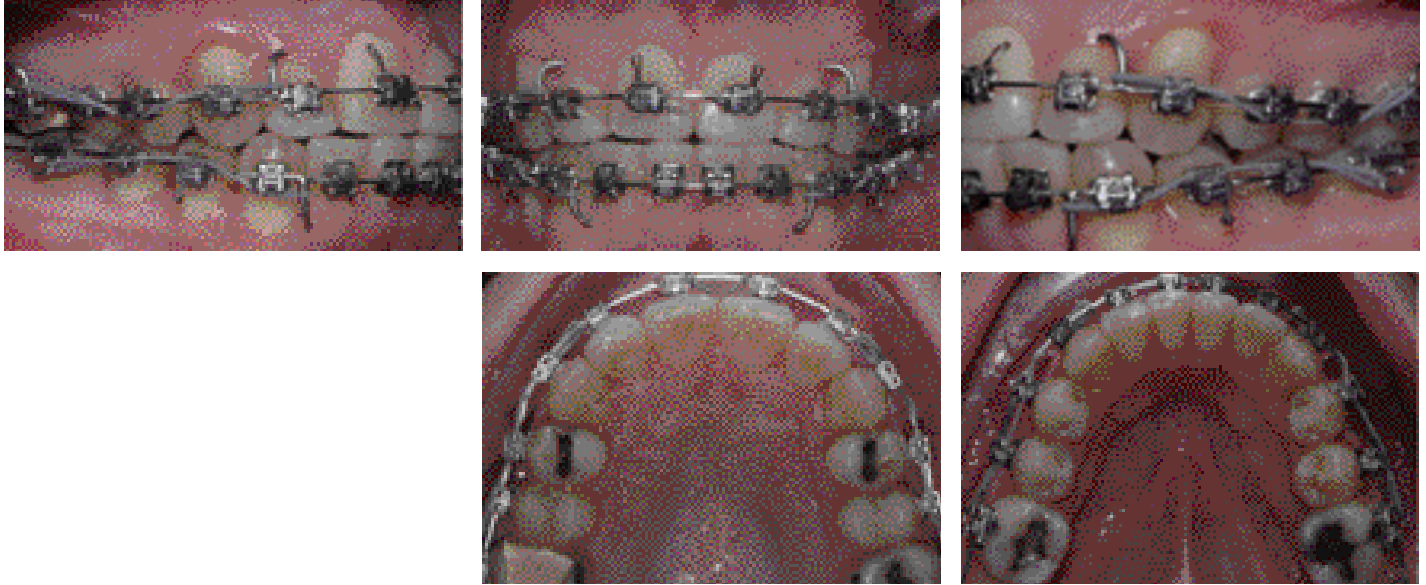
Appt. 5
11 months – 2 weeks:

- Placed .019 x .025 maxillary and mandibular preposted stainless steel archwires.
- Started full-time Class III elastics (see *Class III elastics*) with anterior trapezoid 5/16" 6 oz.



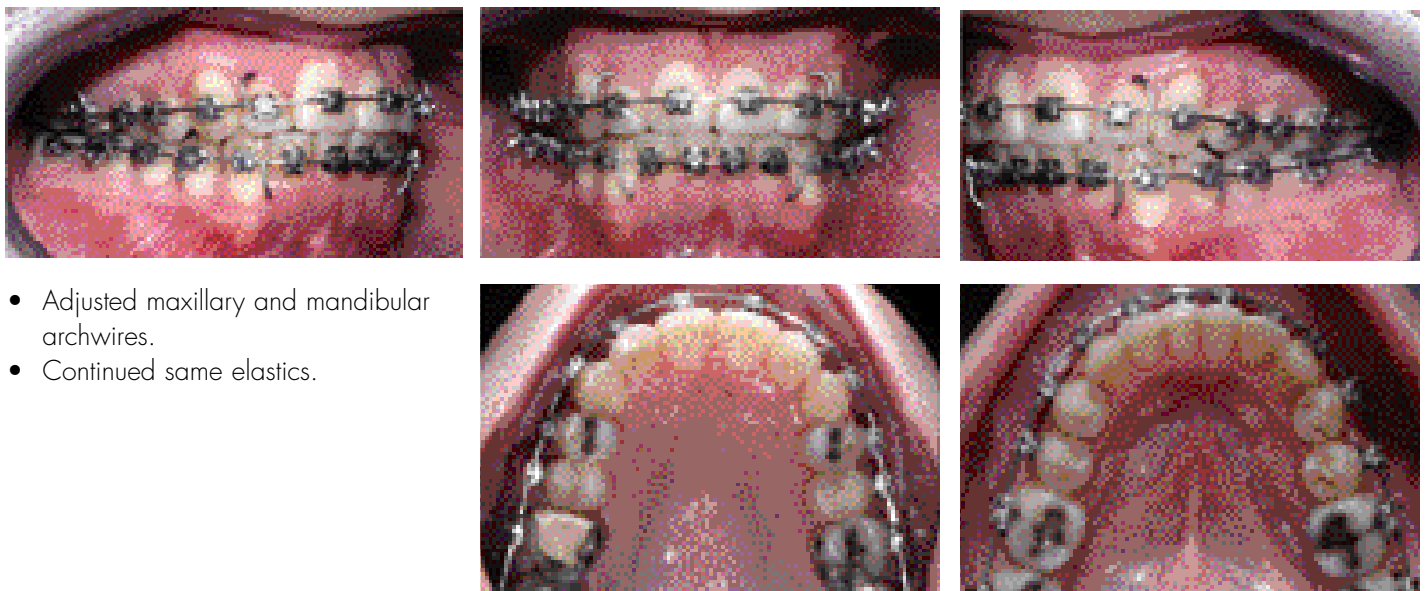
Class III and Anterior Trapezoid Elastics

Appt. 6
13 months:



- Adjusted maxillary and mandibular archwire. Tissue grafting performed.
- Continued Class III elastics with anterior trapezoid.
- Note anterior bite closing.

Appt. 7
14 months – 1 week:



- Adjusted maxillary and mandibular archwires.
- Continued same elastics.

Finals

15 months - 1 week: Debonded upper and lower.



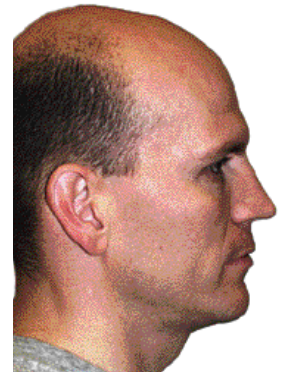
Pretreatment



Posttreatment



Pretreatment



Posttreatment



Final



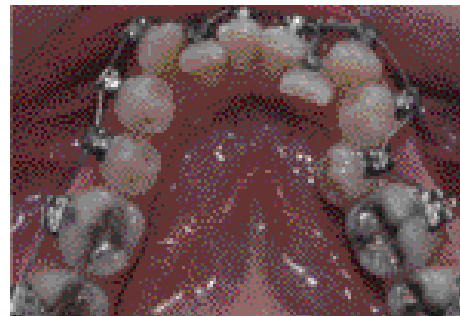
Final



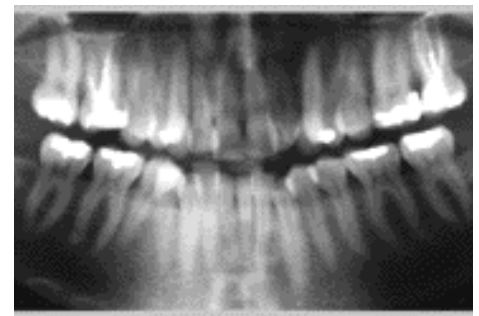
Final



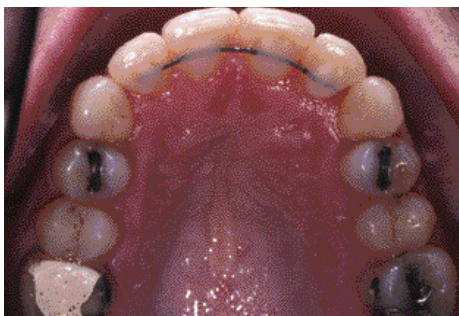
Initial Bonding



Initial Bonding



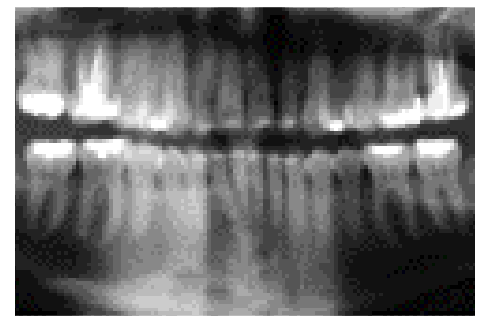
Initial



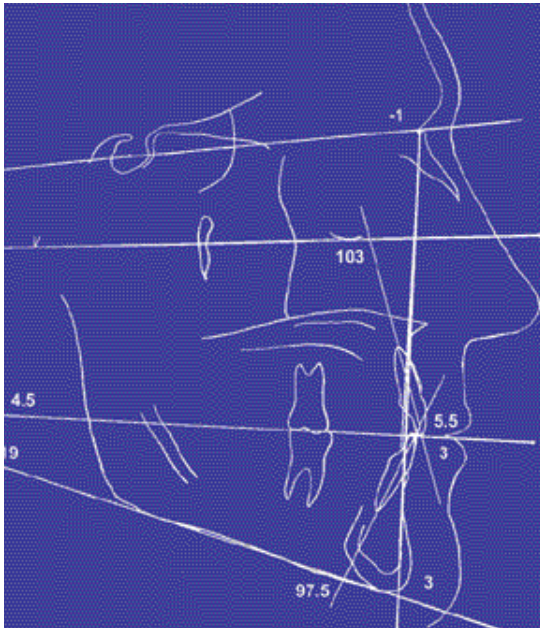
Posttreatment



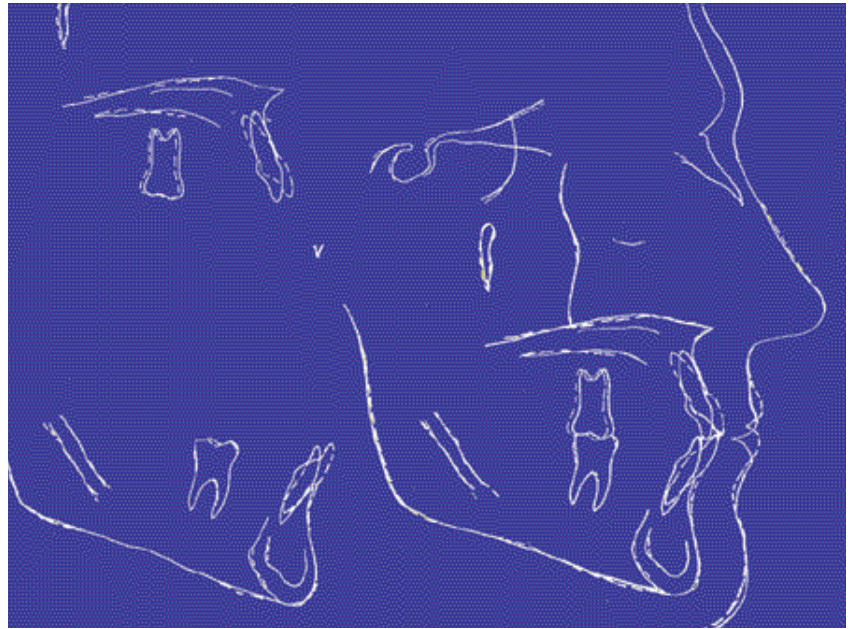
Posttreatment



Final



Initial



Composite

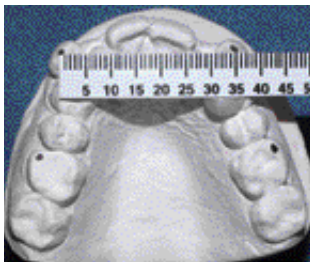
Occlusal Cast Transverse Measurement Comparisons

Pretreatment

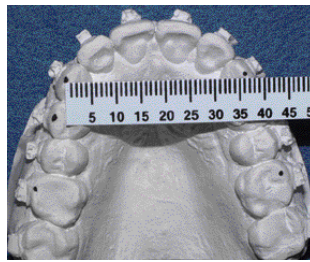
Posttreatment

Pretreatment

Posttreatment



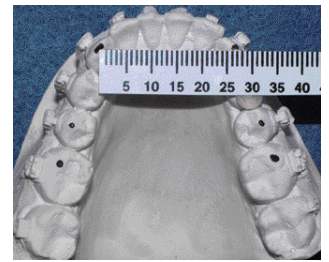
35.0 mm



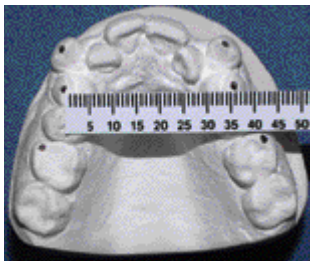
36.0 mm
1.0 mm change



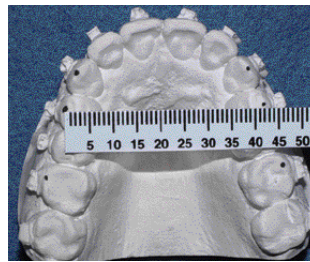
26.0 mm



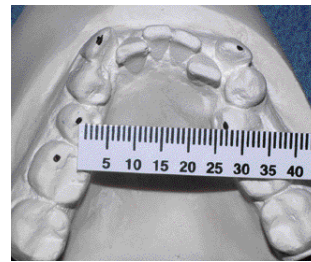
26.5 mm
.5 mm change



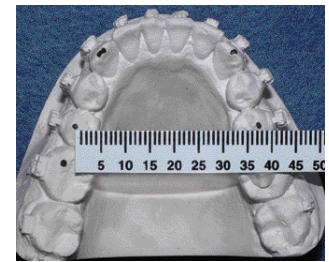
36.0 mm



42.0 mm
6 mm change



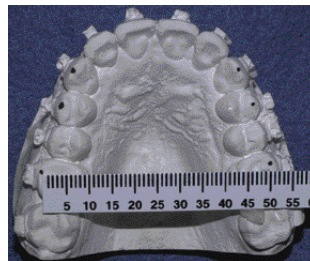
27.0 mm



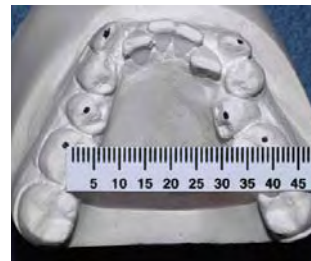
37.5 mm
10.5 mm change



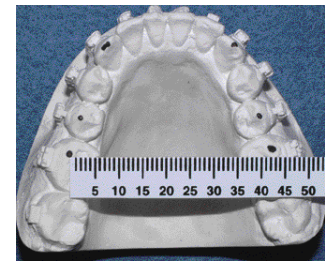
47.0 mm



50.0 mm
3.0 mm change



38.5 mm



42.5 mm
4 mm change

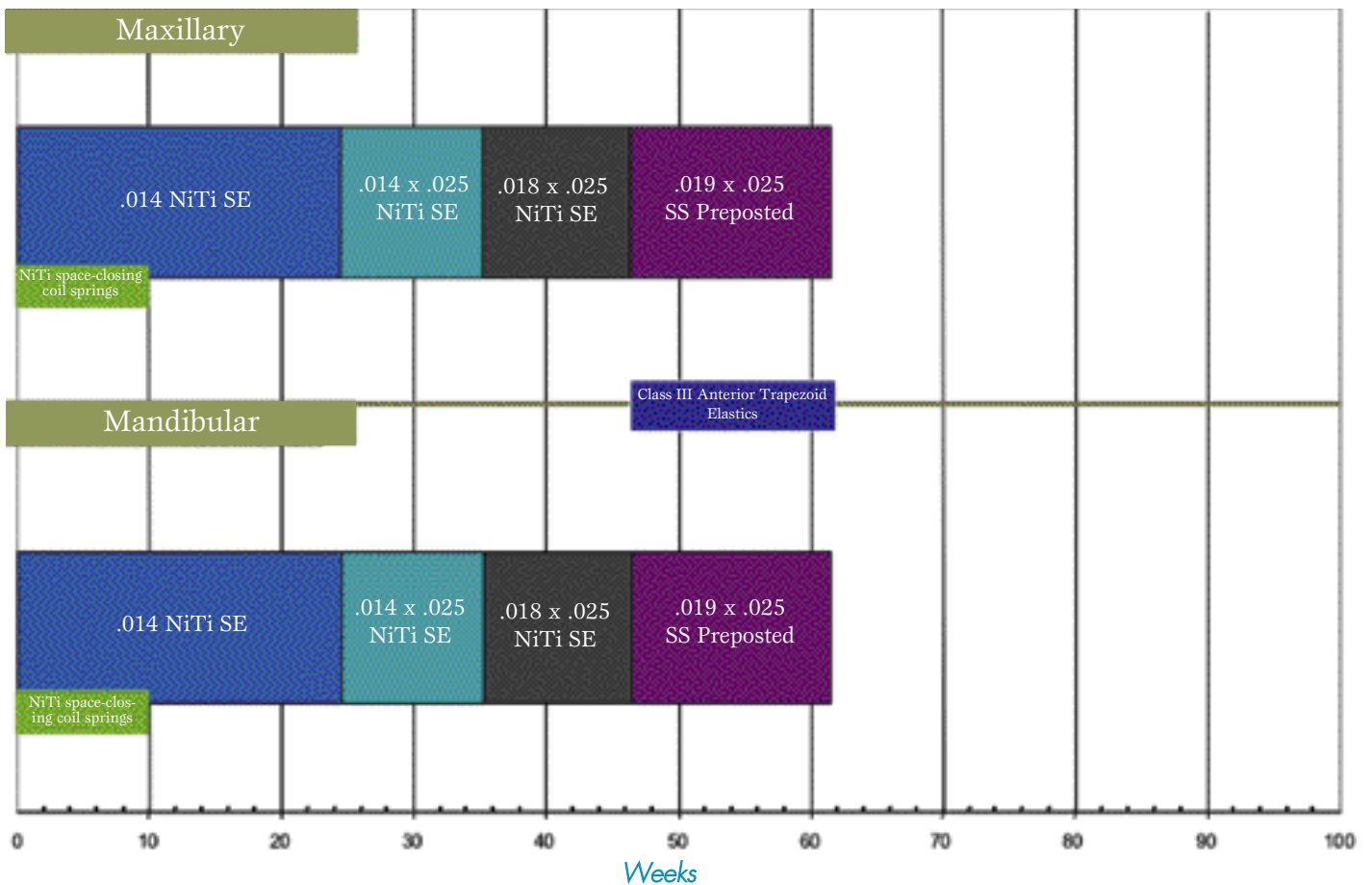


Damon Splint

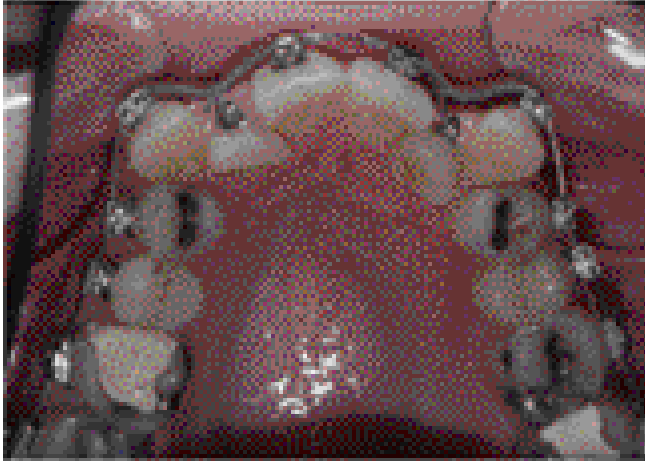
Retention:

1. Maxillary .016 x .022 Braid-a-bond archwire bonded lateral to lateral.
2. Mandibular .026 steel round bonded to all teeth cuspid to cuspid due to the severity of crowding.
3. Clear plastic overlay retainers made for upper and lower arches.
4. Damon Splint made for night retention giving "activator" type of effect (see Retention).

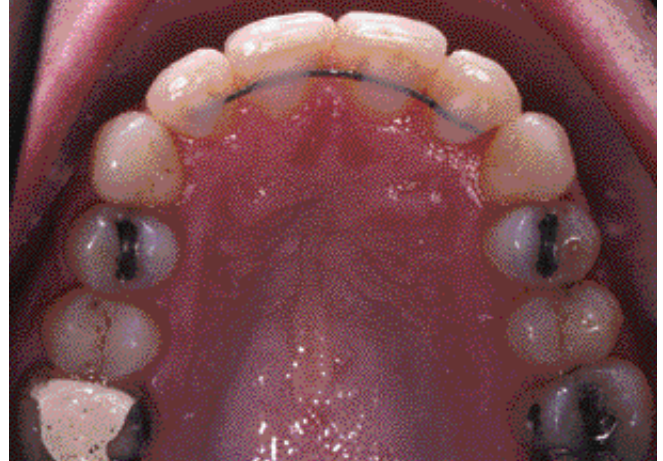
T.S. Case Summary



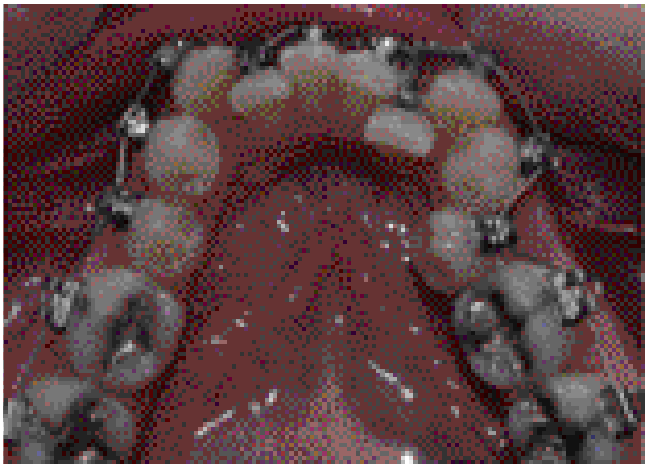
T.S.



Initial



Final



Initial



Final