S.H.

Age: 15 Years – 3 Months

Diagnosis: Class I Nonextraction – Severe crowding, very flat profile

Background:

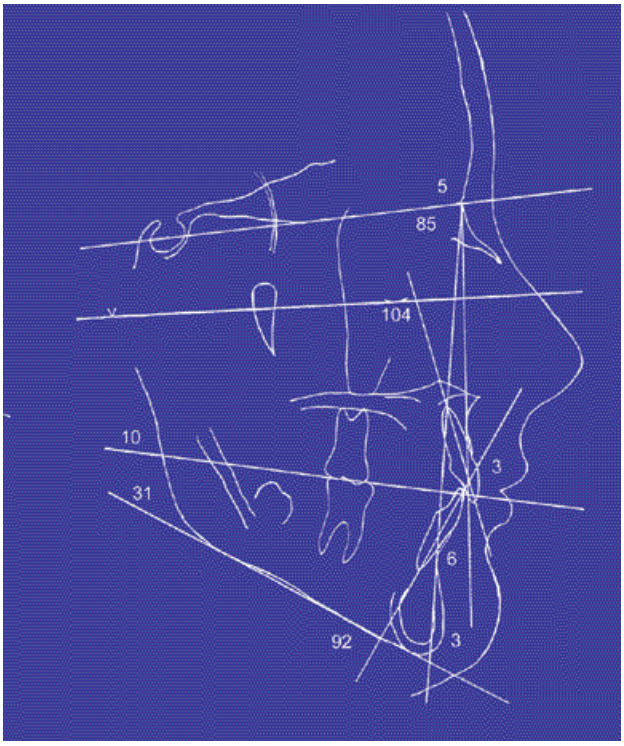
This case was selected to illustrate the long-term impact of treatment planning on the face and the periodontal considerations resulting from extensive crowding. Treatment planning cases like this one can be extremely challenging. This patient has a very obtuse nasolabial angle and lack of lateral facial support. With maturation, it is well established that the severity of the flat profile magnifies. Realizing the long-term implications on the profile, nonextraction therapy has always been desired but questionable due to the periodontal impact on the lower arch.

With traditional mechanics, the lower incisors always severely tipped forward with an adverse impact on periodontium of the lower incisors. The periodontist who followed this case was astonished at how the bone and tissue responded to low-force/low friction therapy. Please carefully evaluate the close-up photographs of the anterior segments taken 10 months in retention. It is gratifying to be able to have a very positive impact on the face, the periodontium, and treat the case in 18 months 2 weeks with 10 appointments.

Facial Evaluation:

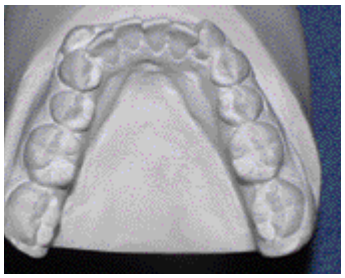
1. Obtuse nasolabial angle.
2. Prominent nose and chin.
3. Lack of lateral mid-face support.
4. Flat upper lip.
5. Concave profile.

Pretreatment Radiographic Survey:



Dentition Evaluation:

1. Severe collapse of upper and lower arches.
2. Severe lack of arch length and width in the maxilla and mandible.
3. Upper right and lower left cuspids totally blocked labially. Upper incisors over-erupted.
4. Minimal bone and tissue covering blocked-out cuspids.
5. Lower posterior teeth tipped lingually.



Treatment Objectives:

Goal:

To improve patient's facial support. Anticipate this profile as a fifty-year-old. This is the perfect example of Face Driven Treatment Planning *(see Physiological adaptation)*. Design low-force treatment mechanics that will allow the orofacial muscles, bone, and tissue to influence where the teeth will move. Hopefully, the tongue will normalize its position as this new physiologic tooth position is established.

1. Gain maxillary and mandibular arch length.
2. Eliminate the need for traditional high-force rapid palatal expansion.
3. Improve the bone, tissue, and vascular support around the labially blocked cuspids.
4. Eliminate the dark corners of the smile.
5. Minimize concave facial profile and obtuse nasolabial angle.

Treatment Sequence:

Special torques in appliance construction.

- Lower right cuspid +7° (high torque) was selected to upright the lingually tipped lower right cuspid.

Start:

1. Bonded maxillary and mandibular 7 to 7, excluding the upper right cuspid and lower left cuspid.
2. Placed maxillary and mandibular.014 NiTi SE *(see Initial archwire)* and activated medium-light NiTi SE spring in the lower left cuspid area *(see NiTi springs)*.
3. No spring was placed in the upper right cuspid area due to the deflection of the archwire resulting from the rotated lateral.





Appt. 1
2 months:

- Rebonded lower right cuspid.
- Continued to let .014 NiTi SE archwire work in mandibular arch.
- Placed maxillary .016 NiTi SE with medium-light NiTi spring in upper right cuspid area *(see NiTi springs)*.

Appt. 2
3 months –1 week:

- Bonded upper right cuspid and lower left cuspid.
- Rebonded upper right lateral after most of the rotation corrected.
- Placed upper and lower .014 NiTi SE archwires.
- Note: Decrease in size of maxillary archwire to accommodate maxillary right cuspid.

Appt. 3
6 months – 1 week:

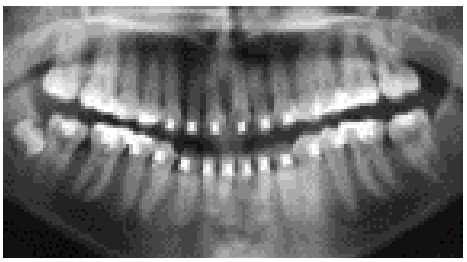
- Placed maxillary .014 x .025 NiTi SE and mandibular .016 NiTi SE archwires.

Appt. 4
8 months – 3 weeks:

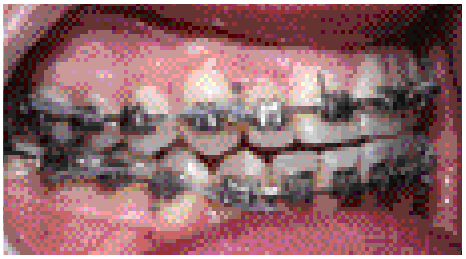
- Placed maxillary .016 x .025 NiTi SE.
- Repositioned lower right second bicuspid bracket.
- Continued with mandibular .016 NiTi SE archwire.

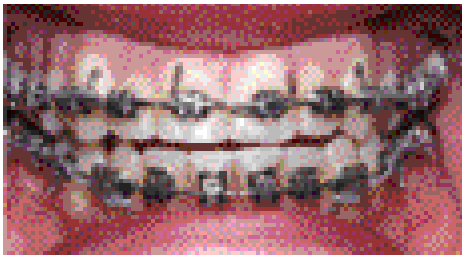
Appt. 5
11 months:

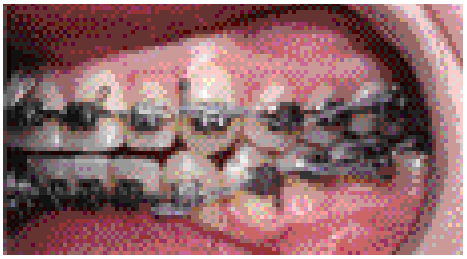
- Took Panorex to check root position and brackets.
- Placed maxillary .019 x .025 preposted stainless steel *(see Final Archwire)*.
- Placed mandibular .014 x .025 NiTi SE.
- Note: Almost one full year of treatment before initiating any rectangular wire on mandibular arch.



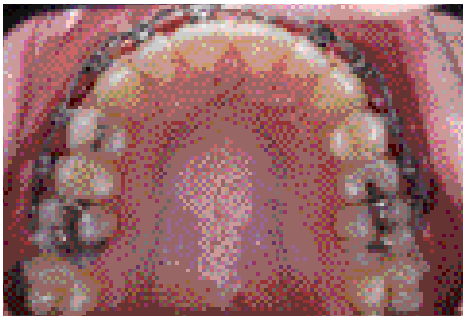
Appt. 6
13 months:



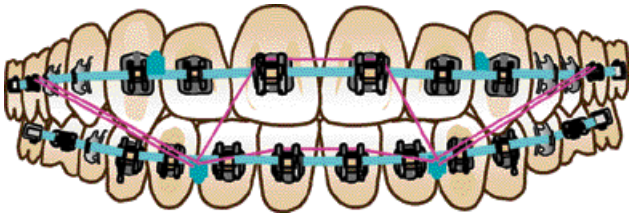




- Placed mandibular .017 x .025 TMA with crimpable hooks.
- Placed tiebacks on maxillary and mandibular archwire (see Tiebacks).
- Started light Class III elastics with anterior trapezoid *(see Class III elastics)*.
- Note: TMA wire used for ease of closing open bite with anterior trapazoid elastics.



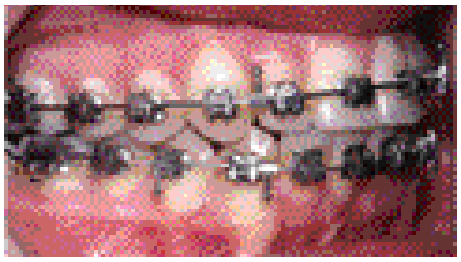
Appt. 7
15 months – 2 weeks:

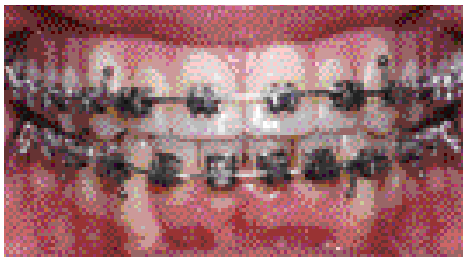


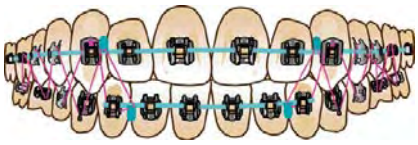
Class III Elastics with Anterior Trapezoid

- Adjusted maxillary and mandibular archwires.
- Continued Class III elastics with anterior trapezoid.

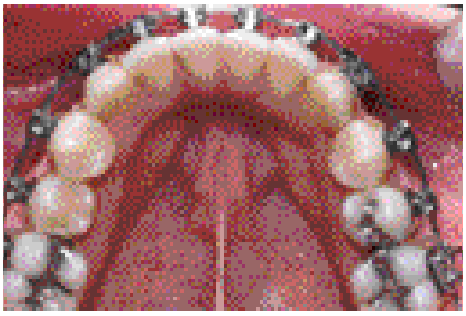
Appt. 8
17 months – 2 weeks:







Finishing Elastics



- Adjusted upper and lower archwires.
- Placed finishing elastics.
- Note: Anterior open bite closed. Now closing posterior open bite with finishing elastics.

Finals
18 months – 2 weeks: Debonded upper and lower.

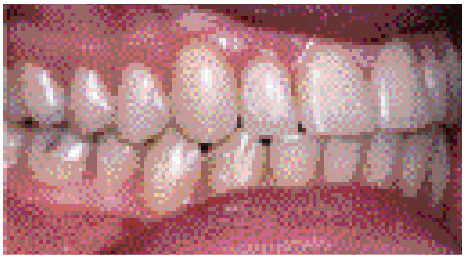
Pretreatment

Posttreatment

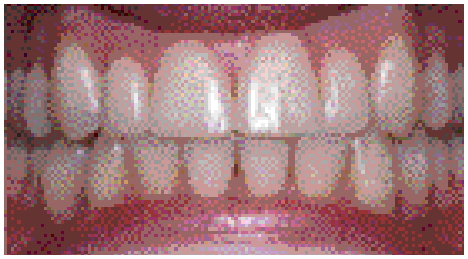
Pretreatment

Posttreatment

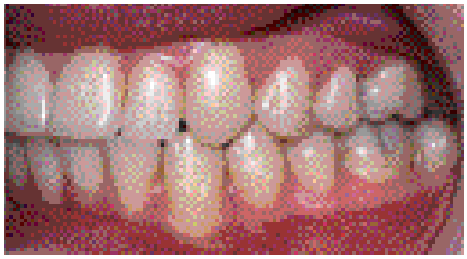
Note increased facial profile support.



Final



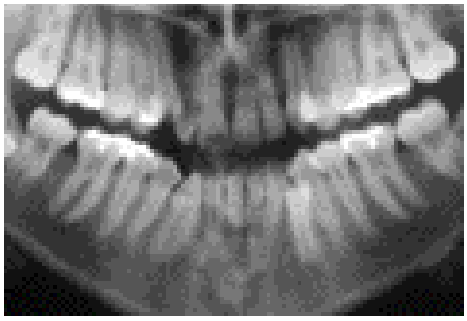
Final



Final

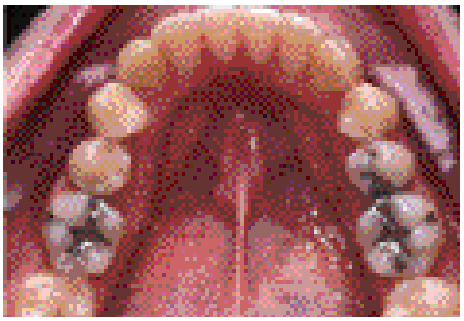
Pretreatment

Pretreatment

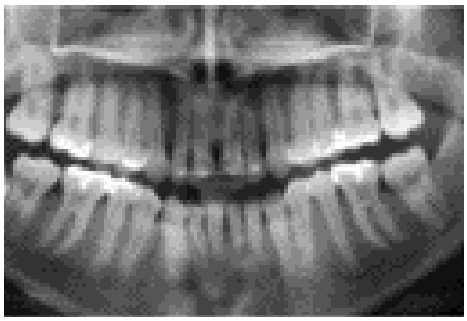


Initial

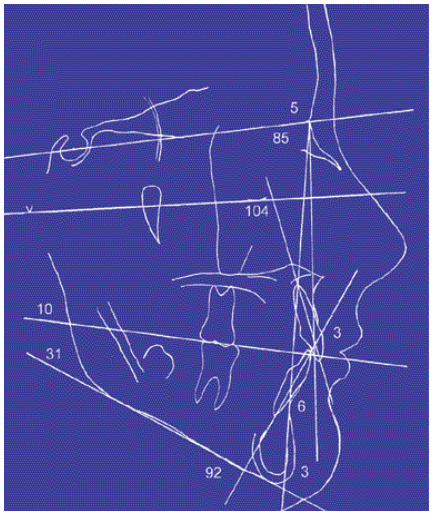
Posttreatment



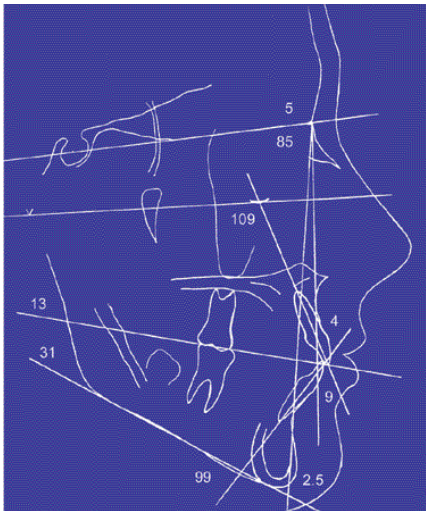
Posttreatment



Final



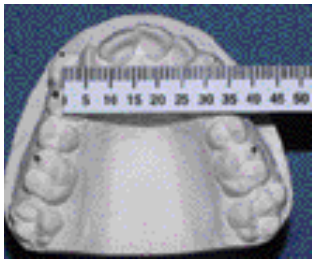
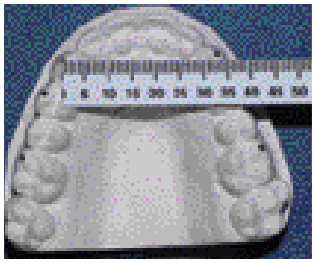
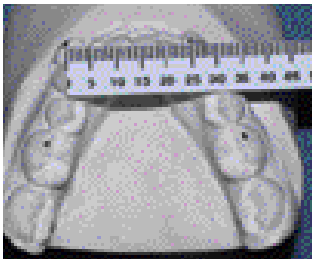
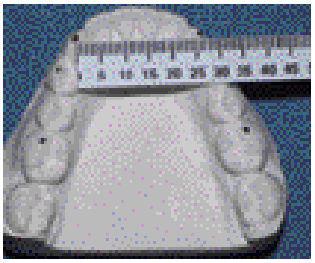
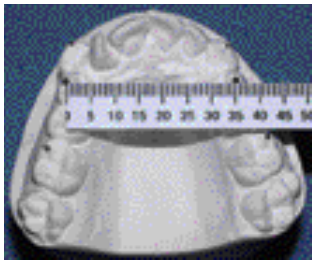
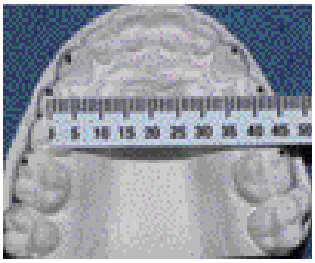
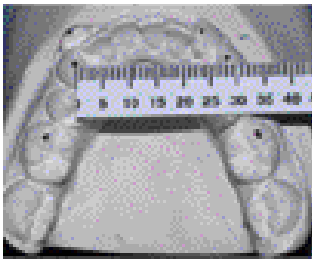
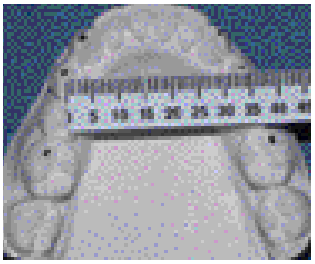
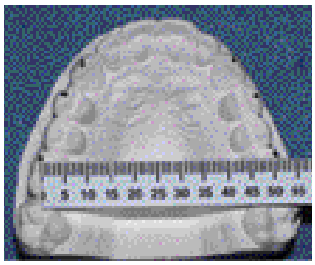
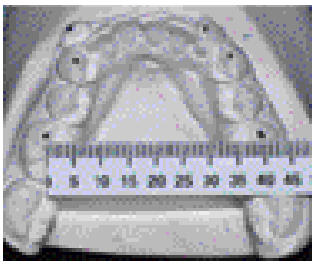
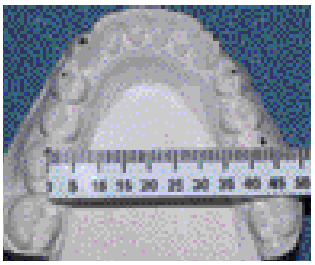
Initial



Final


Composite

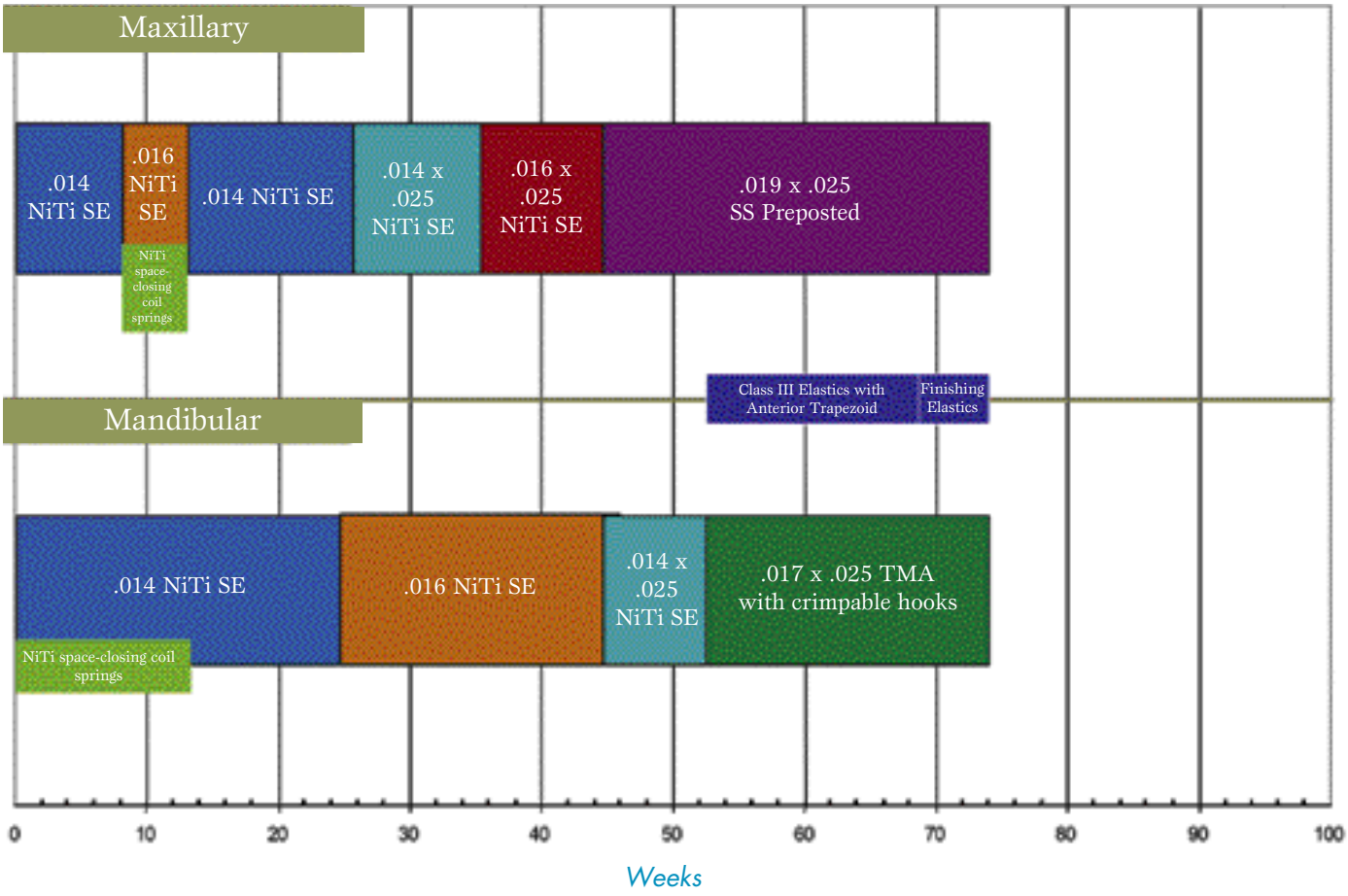
Occlusal Cast Transverse Measurement Comparisons

Pretreatment	Posttreatment	Pretreatment	Posttreatment
			
32.0 mm	33.0 mm 1 mm change	25.0 mm	26.0 mm 1 mm change
			
35.0 mm	41.0 mm 6 mm change	28.0 mm	33.0 mm 5 mm change
			
46.0 mm	50.0 mm 4 mm change	39.0 mm	42.5 mm 3.5 mm change

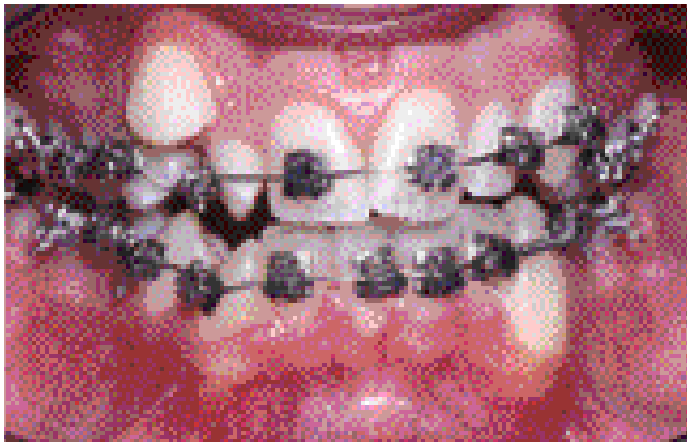
Retention:

1. Debanded upper and lower.
2. Bonded upper and lower retainer wires placed cuspid to cuspid due to severity of crowding and tongue habit.
3. Clear-plastic overlay retainers made for upper and lower arches.
4. Impression taken for Damon Splint absolutely critical to make splint for nighttime wear – helps contain the tongue and maintain orientation of the upper and lower arches.

S.H. Case Summary



S.H.



Initial

10 Months Retention

Note the incredible bone and tissue contours around the upper right and lower left cuspids that were initially blocked out of the arch.