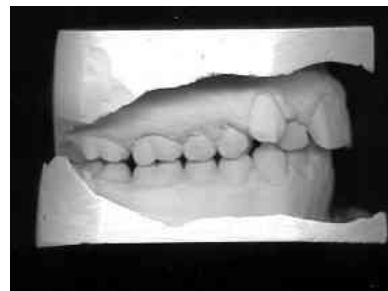# Othodontic Diagnosis and Treatment Plan

For

Initial Appearance

Characteristics of the Malocclusion

Upon the initial clinical evaluation the following characteristics were noted.

Dental Evaluation

Male age 12 with a permanent dentition and a Class II Division 1 malocclusion. The right side has a Class II molar of 5 mm, and a Class II cuspid of 5 mm. The left side has a Class II molar of 5 mm, and a Class II cuspid of 5 mm. Dental Crowding was estimated at 6 mm. in the lower arch and 9 mm. of crowding in the upper arch.

The vertical dimension is dental deep 60 percent deep. The transverse dimension of the dental arches showed a normal relationship upper to lower. The supporting structures of the teeth has no obvious problems.

Additional features included a Deep curve of spee, Ovoid archform, and tapered upper incisors.   The mandible seated in the fossa with a functional shift to the left.

Facial Survey

The patient has a mesofacial facial pattern, with a convex profile. The upper midline is right relative to the facial midline. The lips are average, the sublabial fold small, and the naso-labial angle is greater than 110° . The upper incisor shows 7 mm. of tooth below the resting upper lip, with 5 mm. of gingival display upon the highest smile given at the evaluation.

Myofunctional Evaluation

The lip competency was adequate, with lip tonicity being normal. Breathing was observed to be Nasal. The dental bite showed an overjet of 5 mm.

Temporo-mandibular Joint Evaluation

Normal function was observed. On the right side late clicking was noted. On the left side late clicking was noted. Upon opening the jaw deviated to the Left with a maximum opening of 30 mm.

Conclusions Following the Initial Evaluation

A verbal discussion was held, at which time several treatments were considered possible, including extraction and surgery for mandibular advancement. The estimated time of treatment was 24-30 Months with an estimated fee of $6000 (+ $240 for two dental extractions).

The findings at the clinical examination were consistent with the patients' chief complaint of crowded teeth, excessive protrusion, excessive overjet, facial appearance unaesthetic. When asked about the perception of protrusion, the patient's opinion was: No Opinion

It is estimated that the front teeth will advance 7.5 mm if a non-extraction treatment is chosen.

Notes to Patient

"Problems" list

1. Skeletally class II (upper jaw futher forward of lowers)
2. Dentally class II (upper teeth forward of lowers) = 5mm
3. Crooked teeth
4. Crowded teeth
5. Wisdom teeth – are present with inadequate room
6. Tapered (smaller than ideal) upper lateral (upper 2nd from midline) incisor teeth.

"Solutions" list

1. Skeletally class II (upper jaw futher forward of lowers) – can perform surgery but unnecessary option because we can perform growth modification. This is done by promote lower jaw growth (relative to upper) by "unlocking" the lower jaw so front teeth do not touch – may require "opening bite" with tempoary fillings on back teeth. This is likely to work well because there is plenty of growth left (see Cervical Vertebra Growth Assessment)
2. Corrected with braces, but requires tooth extraction (upper first molars 16 & 26) to create room to pull upper teeth back into mouth
3. Corrected with braces.
4. Corrected with braces, but requires tooth extraction (upper first molars 16 & 26) to create room.
5. Upper corrected by, tooth extraction (upper first molars 16 & 26) to create room for wisdom teeth. Lower wisdom teeth most likely will require extraction.
6. May require filling to enlarge teeth. To be assessed and placed at end of treatment – no charge if required.

Treatment plan

1. Extract upper 16, 26 molars – these teeth are hypoplastic (congenitally weaker than usual). This will
   o Mean that we nolonger need to maintain these weakended teeth
   o create room for upper wisdom teeth,
   o room to correct class II
   o room to correct crowded/crooked teeth
2. Braces and possibly elastics (worn by patient) to retract upper front teeth.
3. Braces to promote growth modification and allow lower jaw to grow forward
4. Filling on lateral incisor at the end of treatment.

Other Technical Notes

- Minor growth modification indicated
- Tapered lateral incisors (smaller than usual) may require filling at end of treatment if there is a small gap
- Non extraction lower - use expansion wire.
- Note upper midline to right 2 mm. accounts for midline asymetery
- Need to lace posterior teeth for maximum anchorage from start.
- Skelatally open so exo upper 6's

Cephalometric Numbers and Conclusions

Skeletal Summary

The Skeletal vertical dimension is Open with a dental Deep bite. At the time of initial evaluation growth was in a Vertical direction. The maxilla is positioned in Retruded position, and the mandible is Retruded. The relationship of the upper and lower jaws is Class I based on evaluation of the ANB and Wits measurements.

Dental Summary

The lower incisors are Retroclined with the antero-posterior position being Average. The upper incisors are Retroclined with the antero-posterior position being Average. Based on the cephalometric evaluation, the initial clinical impressions, and the patients' feelings about the position of their teeth, a treatment objective has been decided to (not indicated) .

Description - Relationship	Measurement	Range	Mean	Patient Measurement - Progress
Palatal Plane to Mandibular Plane: Skeletal Open/Closed	ANS - PNS to Mand. Plane	24 (Closed) to 33 (Open)	28	36.3
Mand Plane Angle Skeletal Open/Closed	9 yr FMA / Adult FMA	20(Closed) to 30(Open) 18(Closed) to 28(Open)	26°	34.7
Y-Axis - Vert/Hor Growth	SGN - FH	57 (Horizontal) to 62 (Vertical)	59	62.6
Maxilla to Cranium: N Perpendicular Reference to A	N Perpendicular A Point	-1 (Retruded) to +3 (Protruded)	+1mm	-2.5
Maxilla to Cranium	SNA	76 (Retruded) to 83 (Protruded)	81°	73.6
Mandible to Cranium: N Perpendicular Reference to Pogonion	N Perpendicular Po	-10 (Retruded) to -4 (Protruded) -4 (Retruded) to 1 (Protruded)	9yr - 7mm Adult - 1mm	-12.8
Mandible to Cranium	SNB	75 (Retruded) to 83 (Protruded)	80°	69.9
Maxilla to Mandible	ANB	CI +2 to +4.5 CIII tendency 0.5 to 1.5	2°	4.7
Wits	A, B Perpendicular Occlusal Plane	Class I -1 to +2	0	1.9
Interincisal Angle	Upper 1 to Lower 1	Best Finish 125 to 130	130°	127.9
Lower Incisor Inclination	Lower 1 to MP	89 (Retroclined) to 98 (Proclined)	92°	88.3
Lower Incisor Protrusion	Lower 1 to NB	+1 (Retruded) to +6 (Protruded)	+4mm	5.6
Lower Incisor Protrusion	Lower 1 to APo	0 (Retruded) to +4 (Protruded)	+2mm	2.6
Upper Incisor Inclination	Upper 1 to SN	99 (Retroclined) to 106 (Proclined)	103°	94.8
Upper Incisor Protrusion	Upper 1 to APo	+2 (Retruded) to +7 (Protruded)	5mm	9.5
Upper Incisor Protrusion	Upper 1 to A Vertical (to FH)	+2 (Retruded) to +6 (Protruded)	4mm	5.5
Naso Labial Angle		90 to 110	100°	120.2
Soft Tissue Line (E Plane) Upper		+1 to -4	-2mm	-0.4
Soft Tissue Line (E Plane) Lower		+1 to -4	-2mm	2.2

Individual Appliance tm Design

A personalized appliance has been designed for the treatment of ▮▮▮▮▮▮ after considering the characteristics of the malocclusion, the final desired aesthetics, the long-term retention, and the unwanted tooth movements from force application. This appliance includes selection of brackets, bands, and archwires with a custom prescription to obtain the most optimal treatment results.

Tooth #	Description	Bracket/Band	Height, mm	Instructions	Band Size	Qty.	Notes
18	-					0	
17		17R2			20	1	
16	To be extracted					0	
15		15R	4.0			1	
14		14R	4.0			1	
13		13R	4.5			1	
12	Distal	12DLi	3.5			1	
11		11Li	4.0			1	
21		21Li	4.0			1	
22	Distal	22DLi	3.5			1	
23		23R	4.5			1	
24		24R	4.0			1	
25		25R	4.0			1	
26	To be extracted					0	
27		27R2			20	1	
28	-					0	
38	-					0	
37	-					0	
36	-					0	
35		35R	4.0			1	
34		34R	4.0			1	
33		33R	4.0			1	
32		32R	3.5			1	
31		31R	3.5			1	
41		41R	3.5			1	
42		42R	3.5			1	
43		43R	4.0			1	
44		44R	4.0			1	
45		45R	4.0			1	
46	-					0	
47	-					0	
48	-					0	

Archwire selection

The lower archform was selected to slightly expand the dental arches, and was chosen to be ovoid, medium . The upper archform was selected to maintain the dental arches, and was chosen to be ovoid, medium.
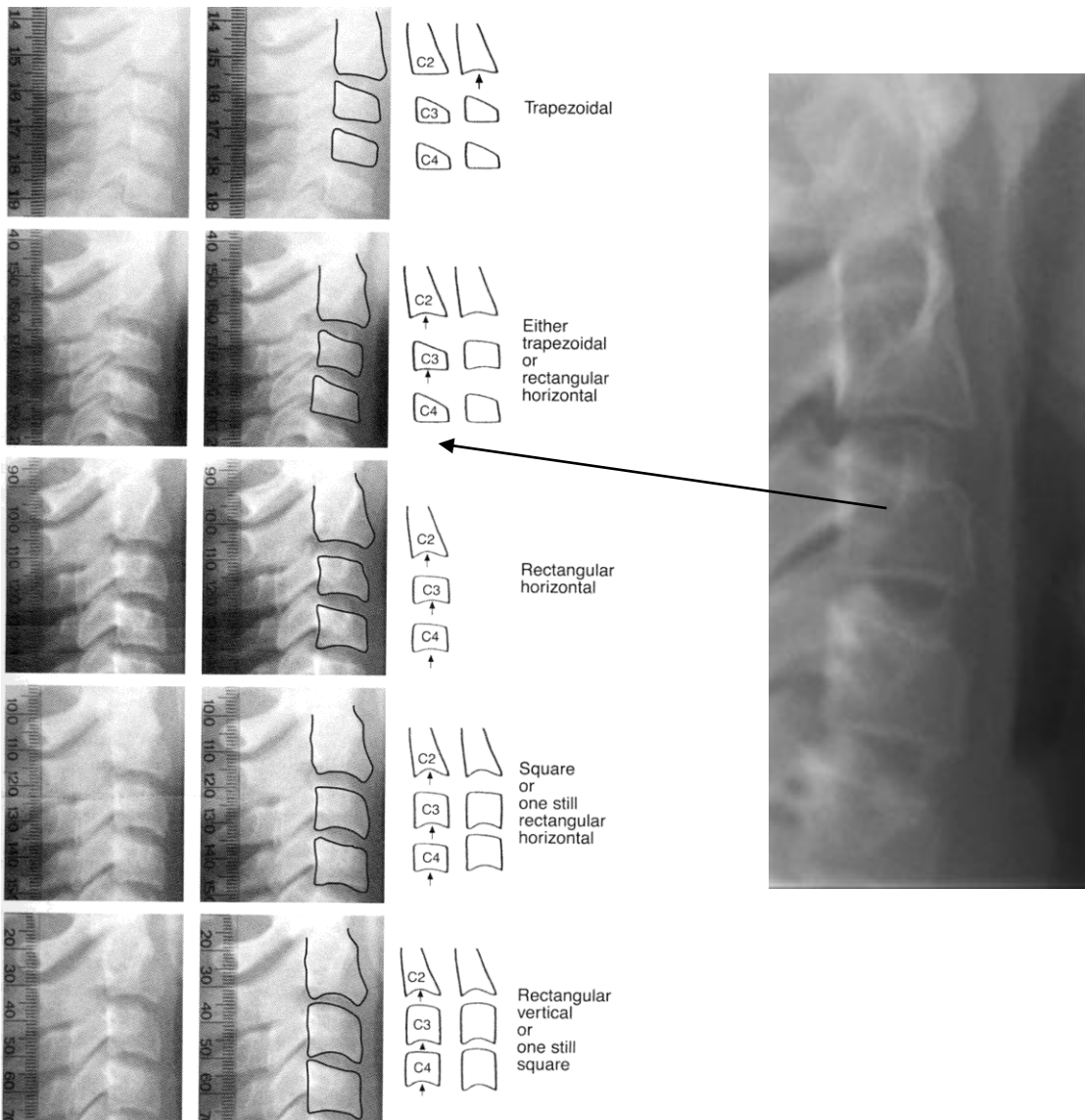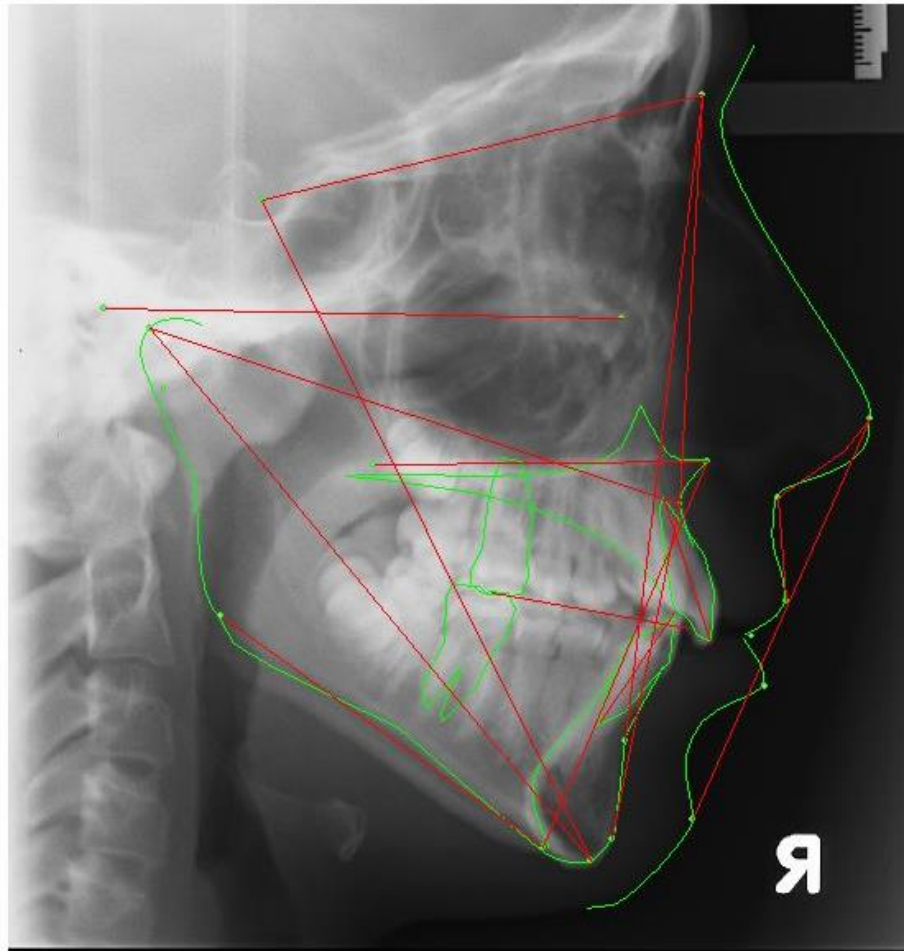
Cervical Vertebra Growth Assessment

Patient:
Date:
Growth Stage: 2-2.5
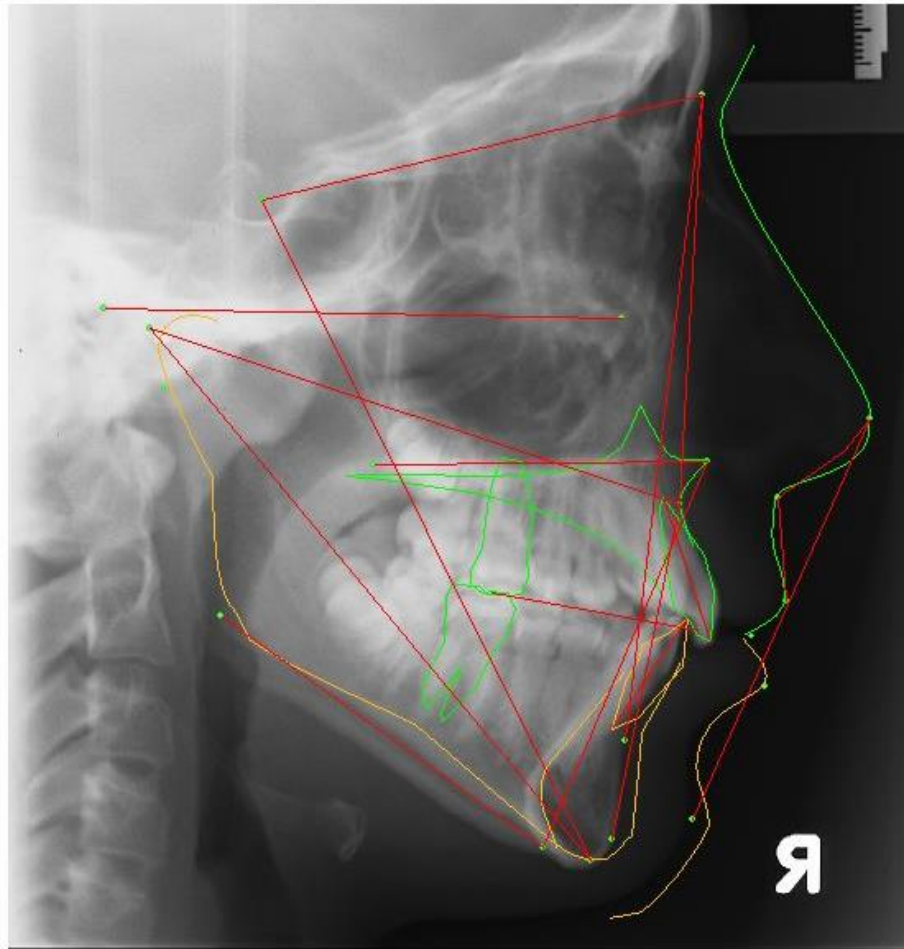Estimated Mandible growth = 3mm

Cephalometric Analysis - Start

Skeletal
Palatal Plane-Mandibular plane = 36.32°
Mandibular Plane Angle (FMA)= 34.73°
Lower face height (ANS-Me) = 70.42mm
Y-Axis = 62.55°
Nasion Perpendicular to A point = -2.45mm
SNA = 73.60°
Maxillary Length = 93.63mm
Nasion Perpindicular to Pogonion = -12.79mm
SNB = 69.86°
Mandibular Length = 115.76mm
ANB = 3.74°
WITS = 1.87mm

Dental/Facial
Interincisal Angle = 127.88°
Lower 1MP = 88.28°
Lower 1NB = 5.59mm
Lower 1APo = 2.58mm
Upper 1SN = 94.75°
Upper 1APo = 9.54mm
Upper 1 to A vertical = 5.45mm
Stomion to Incision = 6.96mm
Nasiolabial Angle = 120.22°
EPlane Upper = -0.45mm
EPlane Lower = 2.17mm
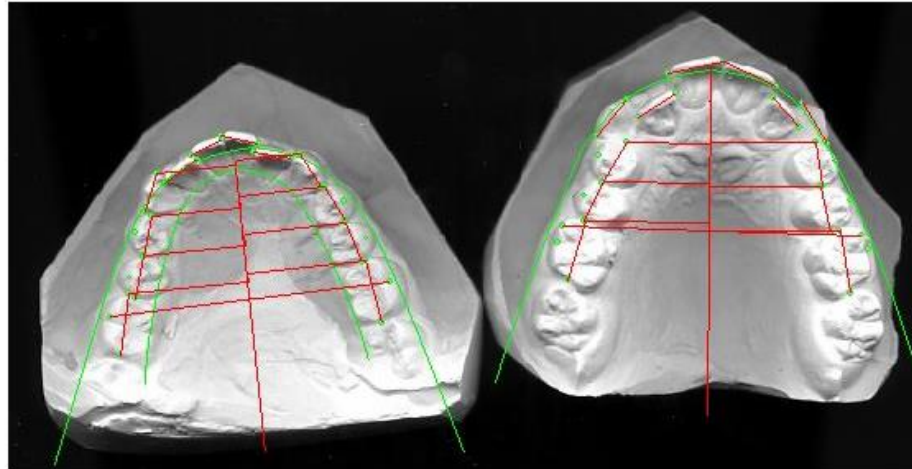
Cephalometric Analysis - Progress

Skeletal
Palatal Plane-Mandibular plane = 36.32°
Mandibular Plane Angle (FMA)= 34.73°
Lower face height (ANS-Me) = 70.42mm
Y-Axis = 62.55°
Nasion Perpendicular to A point = -2.45mm
SNA = 73.60°
Maxillary Length = 93.63mm
Nasion Perpindicular to Pogonion = -12.79mm
SNB = 69.86°
Mandibular Length = 115.76mm
ANB = 3.74°
WITS = 1.67mm

Dental/Facial
Interincisal Angle = 127.88°
Lower 1MP = 88.28°
Lower 1NB = 8.05mm
Lower 1APo = 5.07mm
Upper 1SN = 94.75°
Upper 1APo = 9.54mm
Upper 1 to A vertical = 5.45mm
Stomion to Incision = 6.96mm
Nasiolabial Angle = 120.22°
EPlane Upper = -0.45mm
EPlane Lower = 2.17mm

Model Analysis - Start

Archwire Selection

Shape Of Mandible = Tapered Mandible #2

Lower Archwire = Lower Medium Ovoid

Upper Archwire = Upper Medium Ovoid

Lower Loop Size = 25.67

Upper Loop Size = 33.45

Archlength Discrepancy and Incisor Advancement

Lower ArchLength Discrepancy = 5.28mm

Upper ArchLength Discrepancy = 8.98mm

Lower Incisor Advancement = 2.64mm

Upper Incisor Advancement = 4.49mm

Asymmetry Right vs. Left

36-46 Discrepancy = 1.44mm

16-26 Discrepancy = 1.37mm

35-45 Discrepancy = 2.04mm

15-25 Discrepancy = 0.60mm

34-44 Discrepancy = 2.03mm

14-24 Discrepancy = 0.16mm

33-43 Discrepancy = 0.94mm

13-23 Discrepancy = 0.38mm

Maxillary and Mandibular Molar widths

Lower 36B-46B = 47.19mm

Upper 16C-26C = 50.30mm

Mixed Dentition Analysis

42D-M = 6.44mm

12D-M = 7.49mm

41D-M = 6.49mm

11D-M = 9.44mm

31M-D = 5.92mm

21D-M = 9.94mm

32M-D = 6.83mm

22D-M = 6.57mm

Sum 32-42 = 25.67mm

Sum 12-22 = 33.45mm

Predicted size lower 3,4,5 = 23.801mm

Predicted size upper 3,4,5 = 24.301mm

Space available for 45,44,43 = 8.41mm

Space available for 35,34,33 = 3.03mm

Total lower crowding (+) or space (-) = 11.44mm

Lower Tooth Rotations
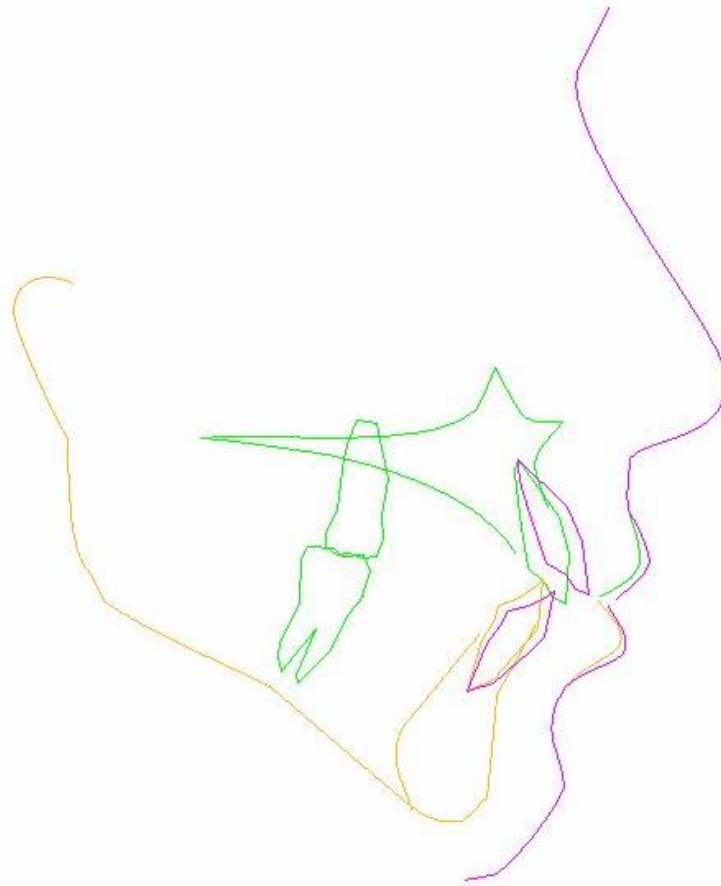
35 Rotation = D 11.99°

45 Rotation = D 5.67°

34 Rotation = D 12.05°

44 Rotation = D 10.04°

33 Rotation = D 31.34°

43 Rotation = D 30.77°

32 Rotation = D 8.97°

42 Rotation = D 6.28°

31 Rotation = D 8.91°

41 Rotation = M 24.76°

Upper Tooth Rotations

15 Rotation = M 3.20°

25 Rotation = D 16.29°

14 Rotation = M 1.71°

24 Rotation = D 19.85°

13 Rotation = D 8.04°

23 Rotation = D 3.75°

12 Rotation = D 9.39°

22 Rotation = D 3.50°

11 Rotation = D 3.37°

21 Rotation = D 9.95°

Virtual Treatment Outcome - Non Ext VTO
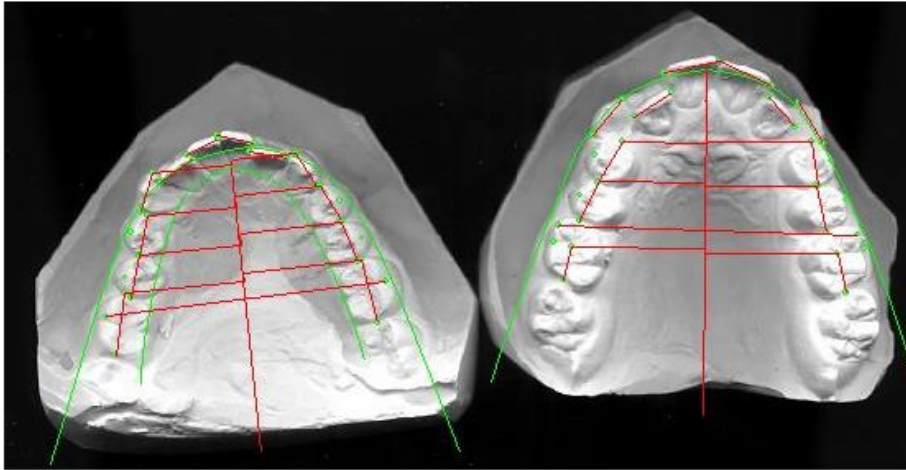
Lower Incisor Movement

Original Lower APO = 5.07mm
Original Lower Lip to EPlane = 2.17mm
Lower Incisor Advancement = 2.61mm
Lower Closing Vertical Change = -1.588mm

Original Lower MP = 88.28°
Lower Lip to EPlane Change = 1.16mm
Lower Procline Inclination Change = 6.61°
Lower Convex Lip Change = 3.12°

Upper Incisor Movement

Original Upper APO = 9.54mm
Original Upper Lip to EPlane = -0.45mm
Upper Incisor Advancement = 4.37mm
Upper Closing Vertical Change = -1.714mm

Original Upper SN = 94.75°
Upper Lip to EPlane Change = -0.49mm
Upper Procline Inclination Change = 9.84°
Upper Convex Lip Change = 7.02°

Model Analysis – Extraction Model

Archwire Selection

Shape Of Mandible = Tapered Mandible #2
Lower Archwire = Lower Medium Ovoid
Lower Loop Size = 25.67

Upper Archwire = Upper Medium Ovoid
Upper Loop Size = 33.45

Archlength Discrepancy and Incisor Advancement

Lower ArchLength Discrepancy = 5.28mm
Lower Incisor Advancement = 2.64mm

Upper ArchLength Discrepancy = 0.28mm
Upper Incisor Advancement = 0.14mm

Asymmetry Right vs. Left

36-46 Discrepancy = 1.44mm
35-45 Discrepancy = 2.04mm
34-44 Discrepancy = 2.03mm
33-43 Discrepancy = 0.94mm

16-26 Discrepancy = 0.83mm
15-25 Discrepancy = 0.60mm
14-24 Discrepancy = 0.16mm
13-23 Discrepancy = 0.38mm

Maxillary and Mandibular Molar widths

Lower 36B-46B = 47.19mm

Upper 16C-26C = 50.30mm

Mixed Dentition Analysis

42D-M = 6.44mm
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Space available for 35,34,33 = 3.03mm

Lower Tooth Rotations

35 Rotation = D 11.99°
34 Rotation = D 12.05°
33 Rotation = D 31.34°
32 Rotation = D 8.97°
31 Rotation = D 8.91°

45 Rotation = D 5.67°
44 Rotation = D 10.04°
43 Rotation = D 30.77°
42 Rotation = D 6.28°
41 Rotation = M 24.76°

Upper Tooth Rotations

15 Rotation = M 3.20°
14 Rotation = M 1.71°
13 Rotation = D 8.04°
12 Rotation = D 9.39°
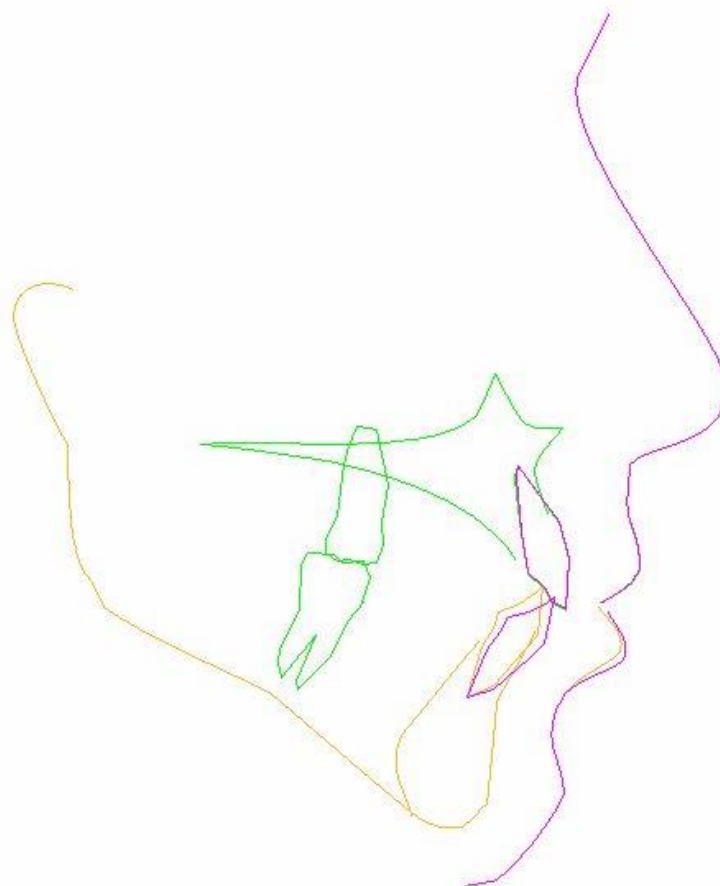11 Rotation = D 3.37°

25 Rotation = D 16.29°
24 Rotation = D 19.85°
23 Rotation = D 3.75°
22 Rotation = D 3.50°
21 Rotation = D 9.95°

Virtual Treatment Outcome – Extraction VTO

Lower Incisor Movement

Original Lower APO = 5.07mm
Original Lower Lip to EPlane = 2.17mm
Lower Incisor Advancement = 2.61mm
Lower Closing Vertical Change = -1.588mm

Original Lower MP = 88.28°
Lower Lip to EPlane Change = 1.16mm
Lower Procline Inclination Change = 6.61°
Lower Convex Lip Change = 3.12°

Upper Incisor Movement

Original Upper APO = 9.54mm
Original Upper Lip to EPlane = -0.45mm
Upper Incisor Advancement = 0.08mm
Upper Closing Vertical Change = -0.026mm

Original Upper SN = 94.75°
Upper Lip to EPlane Change = -1.87mm
Upper Procline Inclination Change = 0.19°
Upper Convex Lip Change = 0.61°

Things you need to know about Orthodontic treatment.

As with all dental treatment, orthodontic treatment has possible risk complications. The possible risks are not limited to this list, but these are the most common.

Tooth decay and gum disease. Orthodontic appliances make it harder to clean teeth and gums. Additional effort is required of the patient to maintain their teeth, gums, and bone. Failure to do this can result in decay, and gum disease. In extreme cases, tooth loss is possible.

Root resorption. Shortening of the tooth during orthodontic treatment. Since there is no accurate method of predicting which cases will have root resorption, progress x-rays will be requested during treatment to evaluate the condition of the tooth roots.

Incomplete bite correction. Patient compliance with the treatment instructions is required for the success of treatment. A lack of patient compliance and/or the inherent skeletal resistance of the malocclusion may result in incomplete bite correction.

Jaw Joint symptoms. There may already be jaw joint problems before treatment has started, even if symptoms were not initially present. Changing the bite can sometimes aggravate these joints, resulting in pains to the head, jaws, and face.

Open contacts after orthodontics. Small spaces are always left between the back teeth at the end of treatment. Almost always they close spontaneously or with help from the orthodontic retainer. In some cases, spaces fail to close. The usual treatment is to place a filling or a crown to close gaps between the teeth.

Surgery. Surgery may be part of your treatment, including, but not limited to tooth extraction, gingival grafting, corticotomy, and orthognathic (jaw) surgery. The usual risks associated with dental surgery include excessive bleeding, loss of flaps with exposed bone and delayed healing, damage to the teeth, nerve damage, and loss of tooth vitality.

More orthodontics due to maturation. Growth may continue after the completion of active orthodontic treatment. In severe cases, retreatment may be necessary to re-establish the correct bite after growth is completed. In cases III malocclusions, the severity can be such that surgery to the jaws may be required to correct the bite.

Change in treatment plan. Although the best effort has been made to make the most complete diagnosis and the most accurate treatment decision, it is possible that changes in the treatment plan may be required during treatment to reach the best outcome.

The goals, limitations, and treatment alternatives, and risks have been presented to me, and I request treatment as suggested.

Signed   Date

Dr Alan Lam agrees to provide orthodontic care to ▮▮▮▮▮ for the **total fee of $6000 + $240 for extraction of upper 6's.** Treatment is expected to take **18-24** months, with appointment intervals ranging from 4-12 weeks. The initial banding fee is $3000 + 240 (extractions) is due at the initial banding/bonding appointment. The remaining treatment fee to be divided into 10 payments of $300.

It is understood that the full amount (total fee) is due before removal of the orthodontic appliances, no matter what the reason to discontinue treatment.

The above orthodontic fee does NOT include fees for the following:

- **Retention - clear upper and lower retainers – estimate $240. If other retainers are necessary, this will be discussed and quoted closer to debanding.**
- **Ongoing hygeine costs + x rays. This may be done every 6 months, at deband (end of orthodontic treatment), and when required.**
- **bridges/crowns** – *not applicable in this case*
- **dental fillings –** *not applicable in this case*
- **possible bonding or veneers after orthodontics** – *not applicable in this case*
- **fiberotomy –** *not applicable in this case*
- **corticotomy –** *not applicable in this case*
- **gingival grafts** – *not applicable in this case*
- **cosmetic gingivectomy** – *not applicable in this case*
- **ceramic/plastic brackets –** *not applicable in this case*
- **Occlusal splint –** *not applicable in this case*

It is expected that the patient will maintain their orthodontic appliances during the treatment time. In the event of breakage or loss of an appliance, an extra fee will be charged for its repair or replacement. These may include:

- **functional appliance**
- **headgear and/or facebow**
- **orthodontic brackets**
- **archwires**
- **retainers**
- **other**

The person(s) responsible for the payment of this account agree to the above terms and conditions.

_____   _____
Responsible person(s)   Date