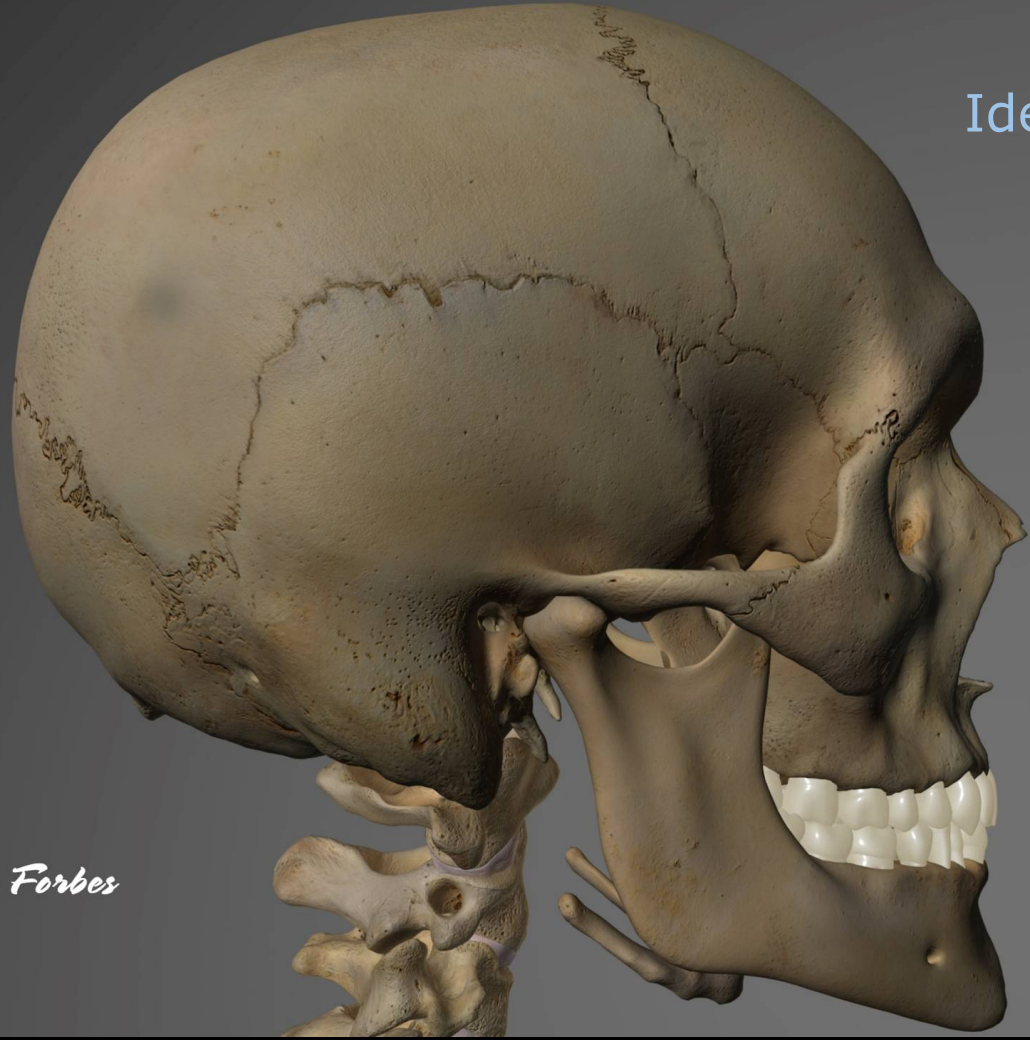


SFOT: Correcting Class III Alveoloskeletal Problems in the Grey Zone

David P. Forbes, DDS, PhD
George Mandelaris, DDS, MS

David P. Forbes

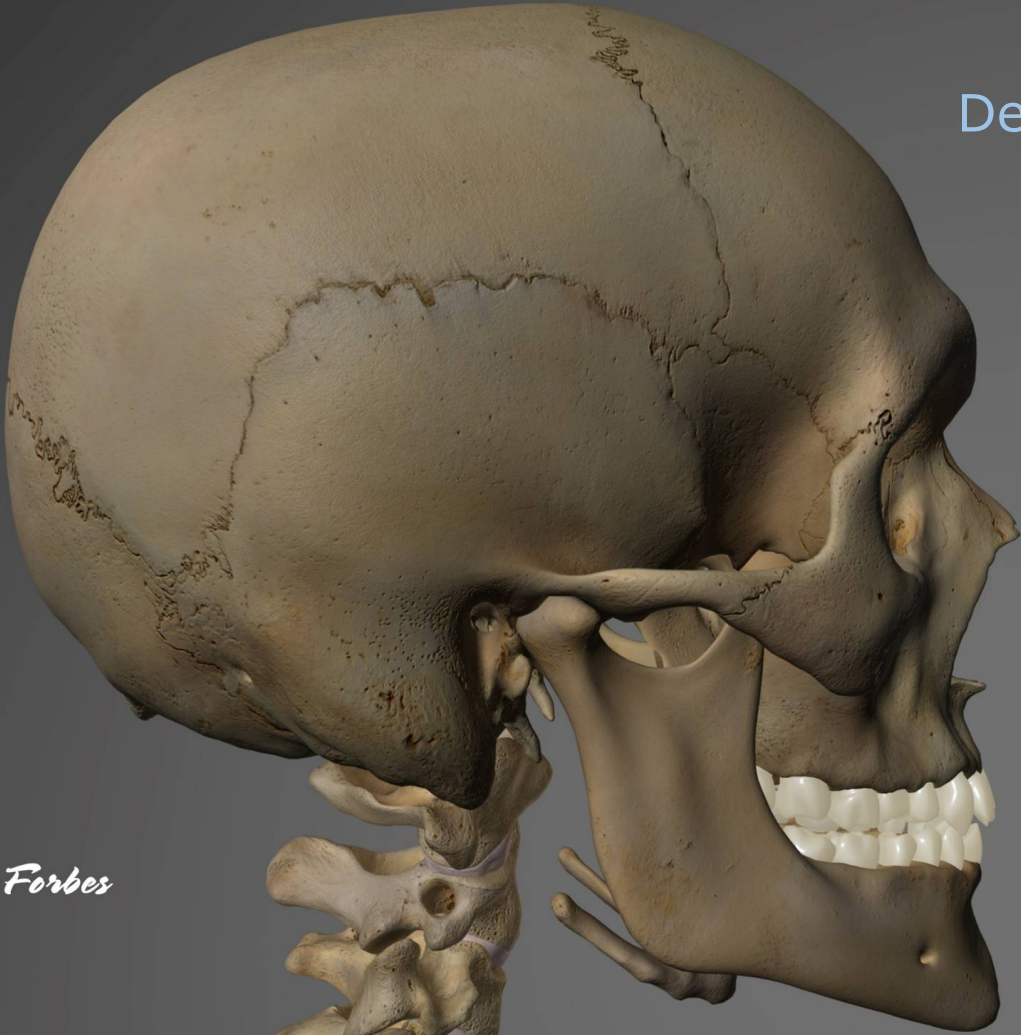


Ideal

Dave Forbes

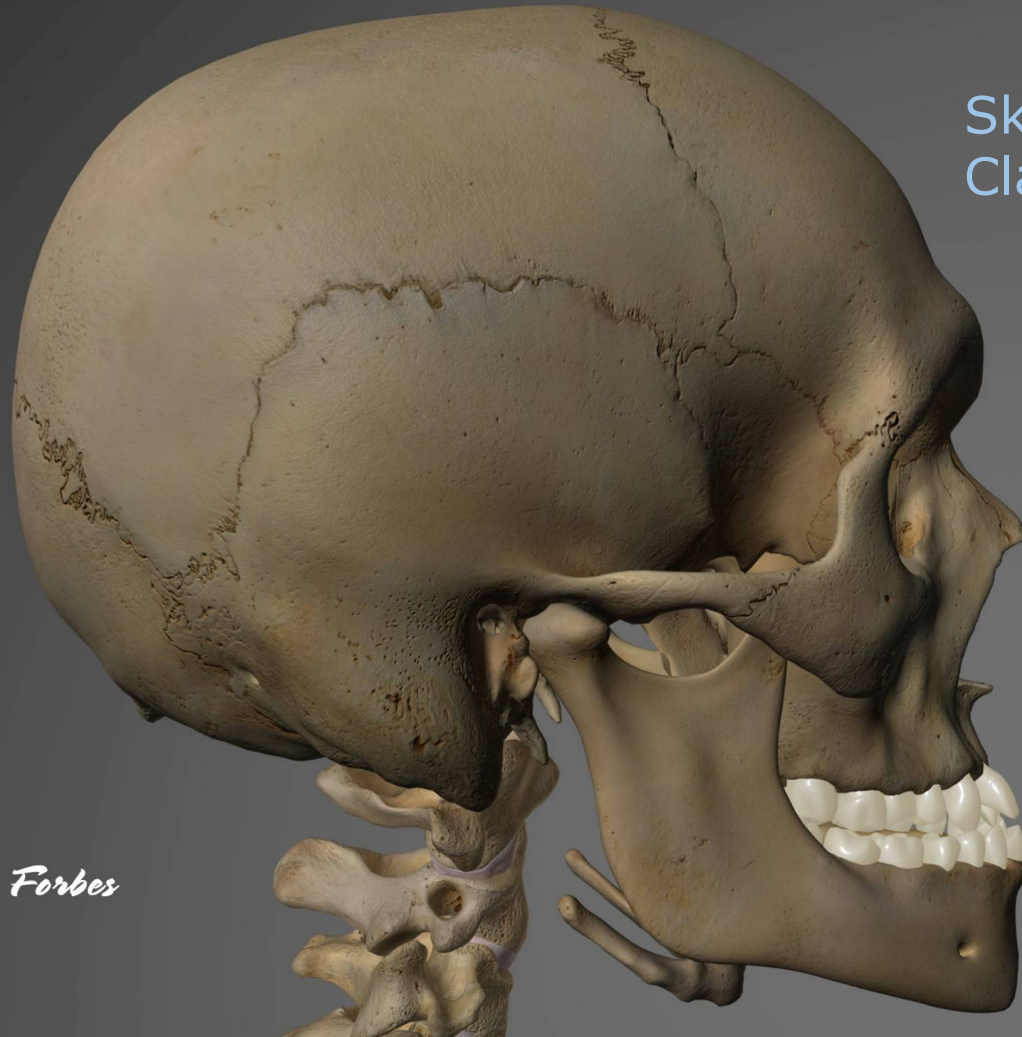
Dentoalveolar

Dave Forbes

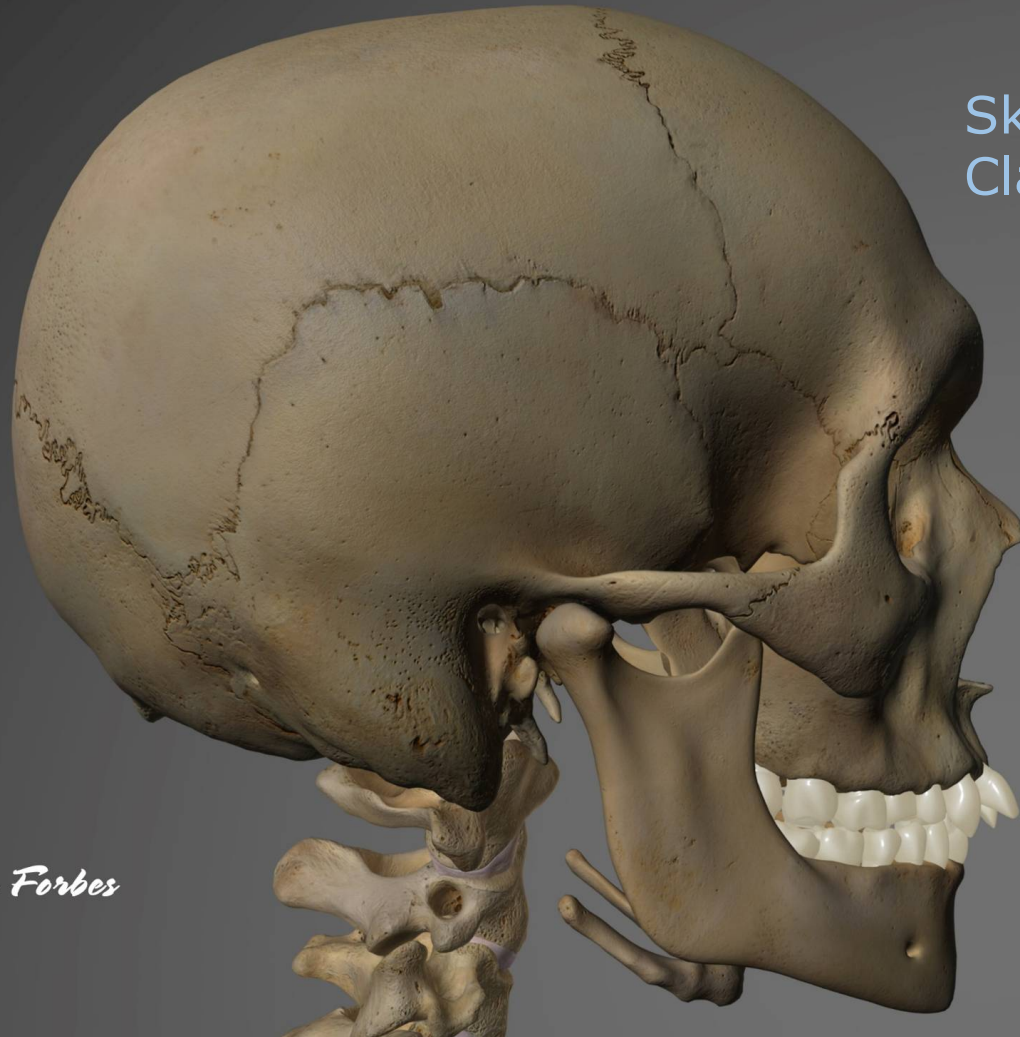


Skeletal
Class III

Dave Forbes



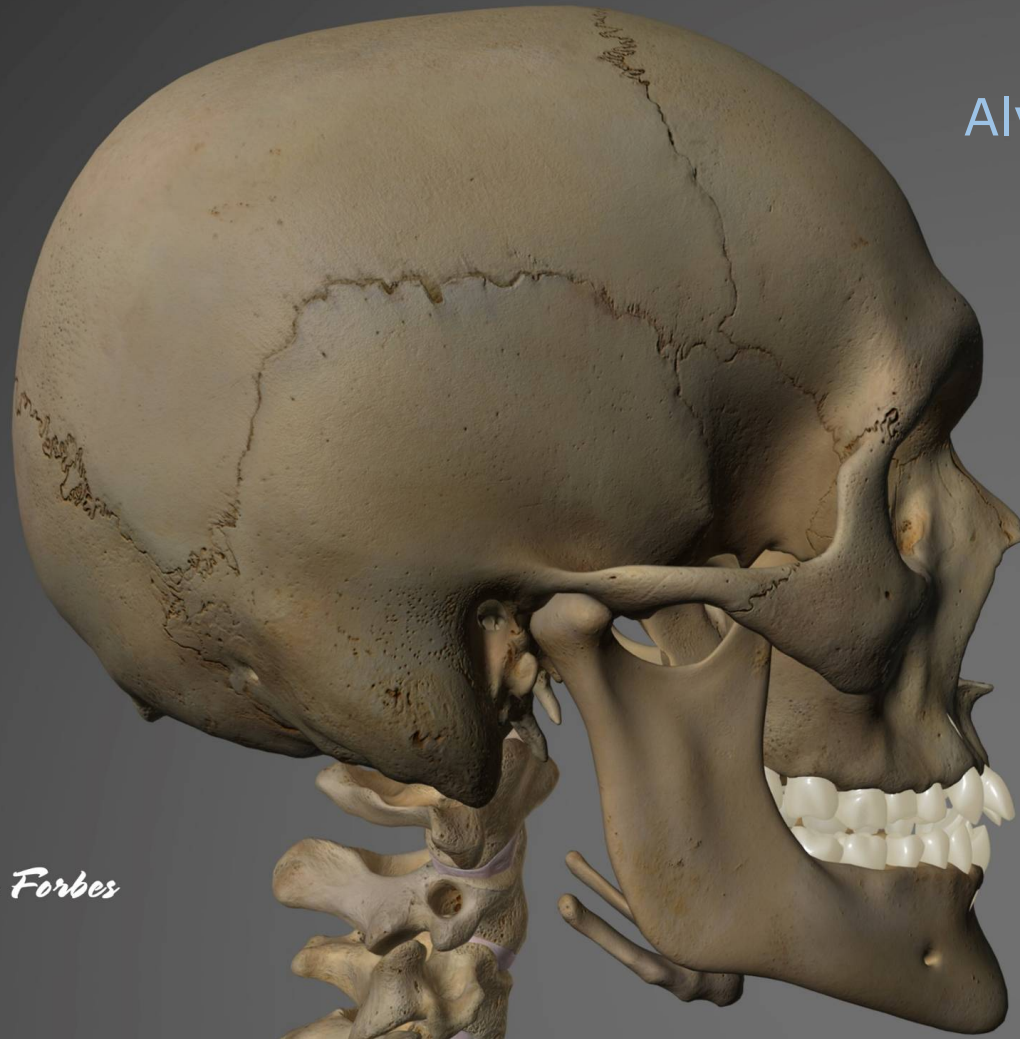
Skeletal
Class II



Dave Forbes

Alveoloskeletal

Dave Forbes



Patient problem list:

Skeletal Class III: Maxillary Deficiency

Mandibular Asymmetry

Posterior Crossbite...

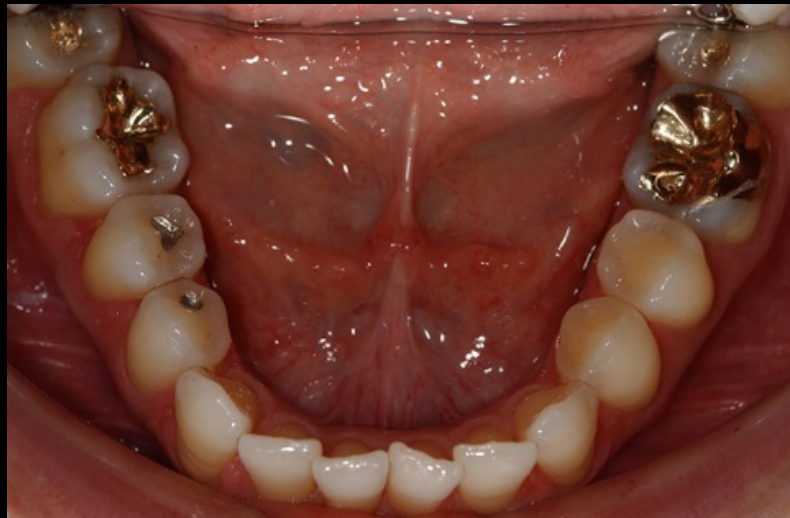
Gingival Stripping

Initial Exam



Class III Malocclusion

Anterior and Posterior Crossbite



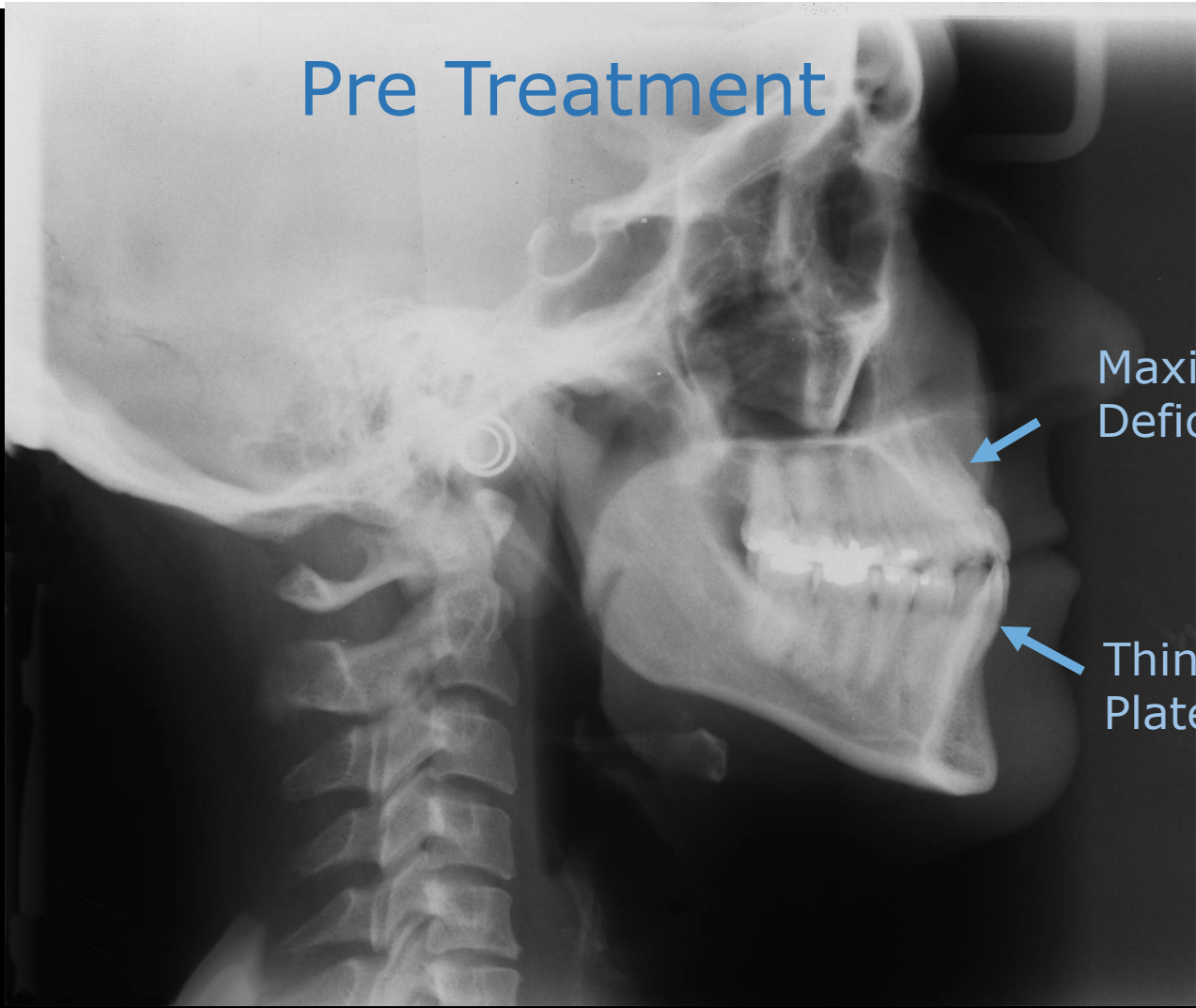
Bite before SFOT



Pre Treatment

Maxillary
Deficiency

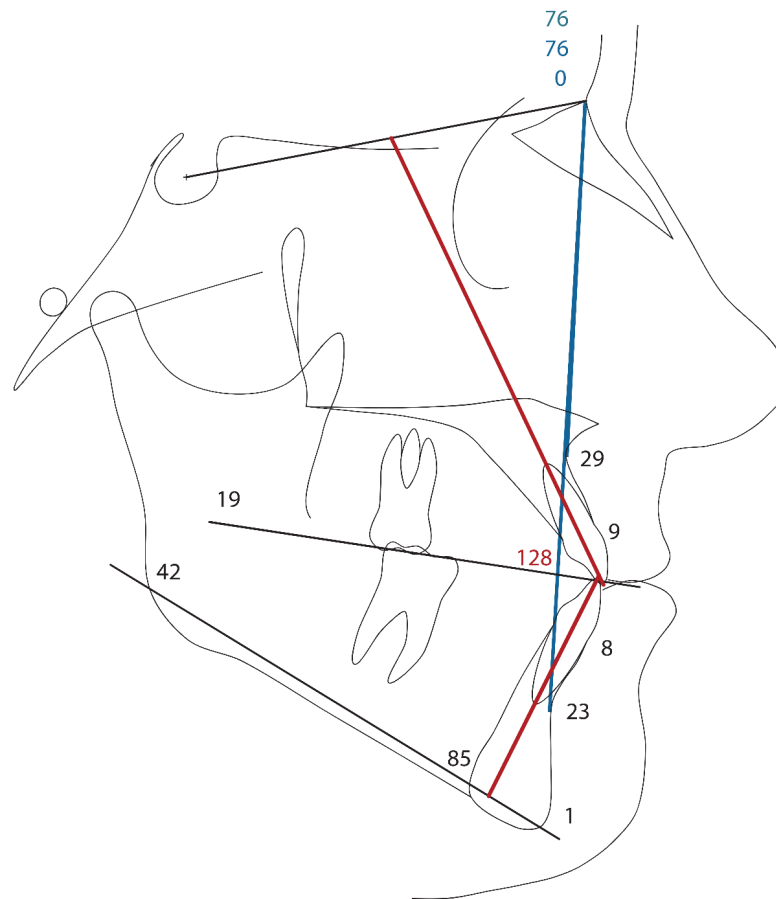
Thin Labial
Plate



Vira Drakoulis · Female · 38y 7m · 05-03-2012

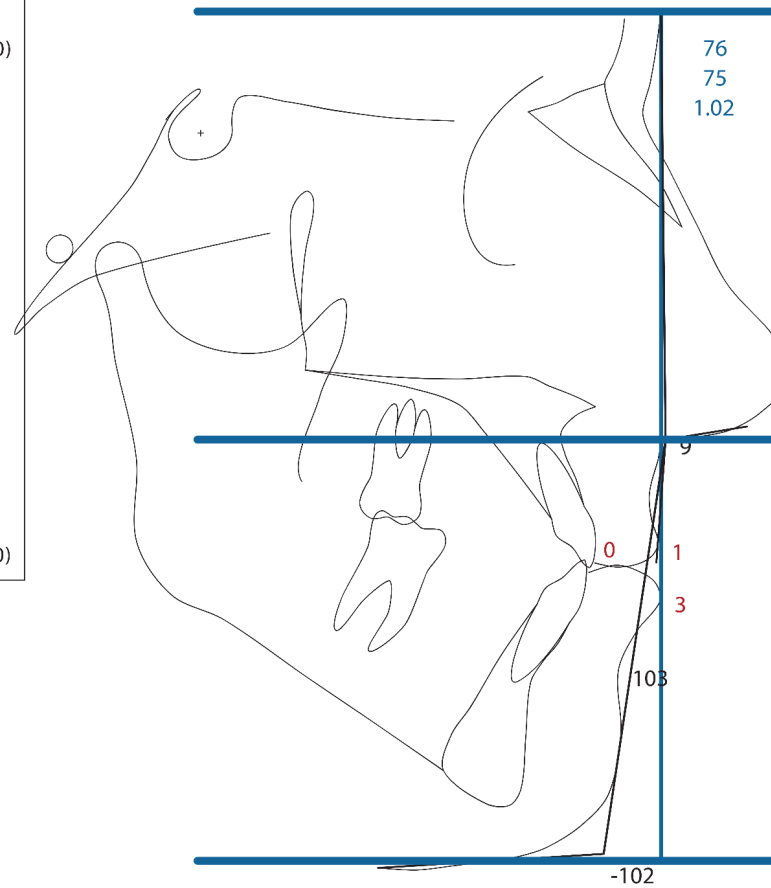
Steiner Analysis

| | | |
|---------------------|---------------|----------------|
| SNA | 75.9° | (82.0) |
| SNB | 75.9° | (80.0) |
| ANB | 0.0 | (2.0) |
| Upper 1 to NA | 28.7° | (22.0) |
| Upper 1 to NA (mm) | 8.6 mm | (4.0) |
| Lower 1 to NB | 23.3° | (25.0) |
| Lower 1 to NB (mm) | 7.6 mm | (4.0) |
| Pogonion to NB | 0.8 mm | (4.0) |
| Lower 1 to GoGn | 85.1° | (93.0) |
| Interincisal | 128.0° | (135.4) |
| SN to OP | 19.4° | (14.5) |
| SN to GoGn | 42.3° | (32.0) |



Legan Analysis

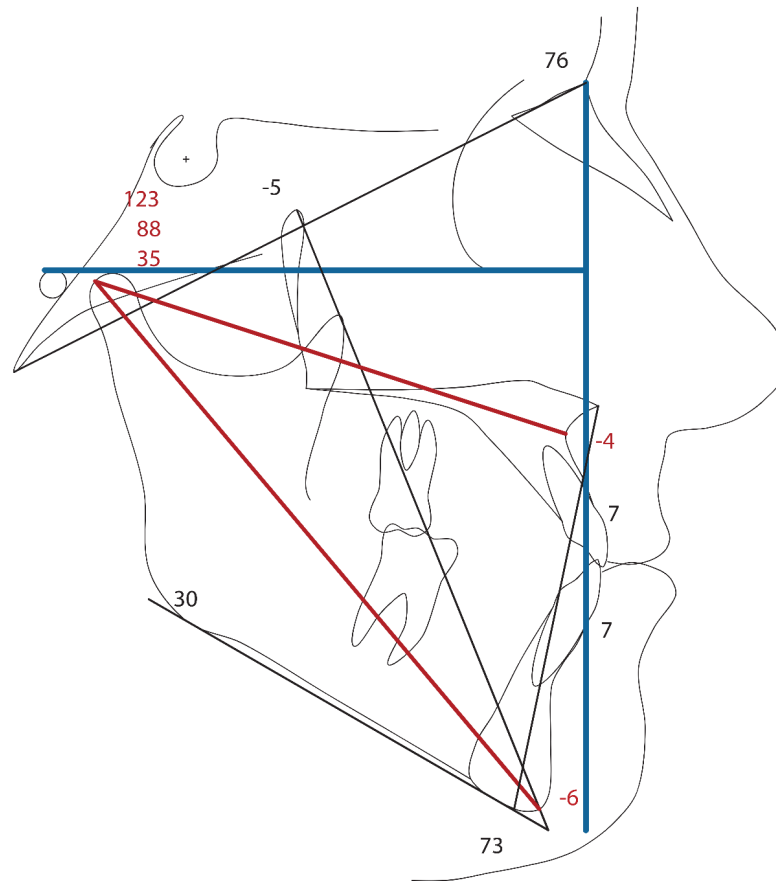
| Facial Form | | |
|-----------------------------------|---------|---------|
| Facial Convexity | 9.1° | (12.0) |
| Maxillary Prognathism | 0.8 mm | (6.0) |
| Mandibular Prognathism | -9.3 mm | (0.0) |
| ufh-hidden | 76.1 mm | |
| lfh-hidden | 74.8 mm | |
| Vertical Height Ratio | 1.02 | (1.0) |
| Lower Face-Throat Angle | -102.1° | (100.0) |
| Lower Vertical Height-Depth Ratio | 1.85 | (1.2) |
| Lip Position and Form | | |
| Nasolabial Angle | 103.4° | (102.0) |
| Upper Lip Protrusion | 1.4 mm | (3.0) |
| Lower Lip Protrusion | 3.3 mm | (2.0) |
| Mentolabial Sulcus | -4.0 mm | (4.0) |
| Vertical Lip-Chin Ratio | 0.43 | (0.5) |
| Maxillary Incisor Exposure | 0.1 mm | (2.0) |
| Interlabial Gap | -0.3 mm | (2.0) |



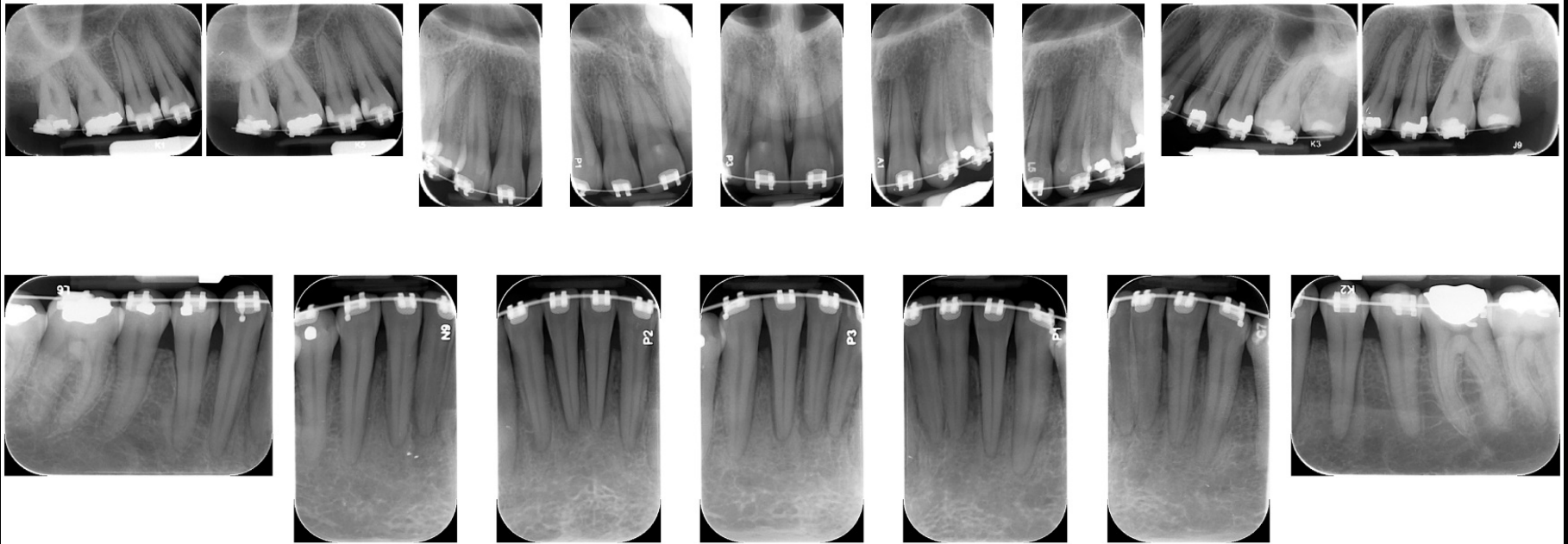
Vira Drakoulis · Female · 38y 7m · 05-03-2012

McNamara Analysis

| | | |
|----------------------------|----------|---------|
| A Point to Nasion Perp | -3.6 mm | (0.4) |
| SNA Angle | 75.9° | (82.4) |
| Mandibular Length | 122.6 mm | (120.2) |
| Midfacial Length | 87.9 mm | (91.0) |
| Max-Mand Differential | 34.7 | (29.2) |
| Lower Anterior Face Height | 73.1 mm | (66.7) |
| Mandibular Plane Angle | 30.0° | (22.7) |
| Facial Axis Angle | -4.8° | (0.2) |
| Pogonion to Nasion Perp | -6.5 mm | (-1.8) |
| Upper 1 to A Point Perp | 7.4 mm | (5.4) |
| Lower 1 to A-Pg | 6.6 mm | (2.7) |



2D Radiographs

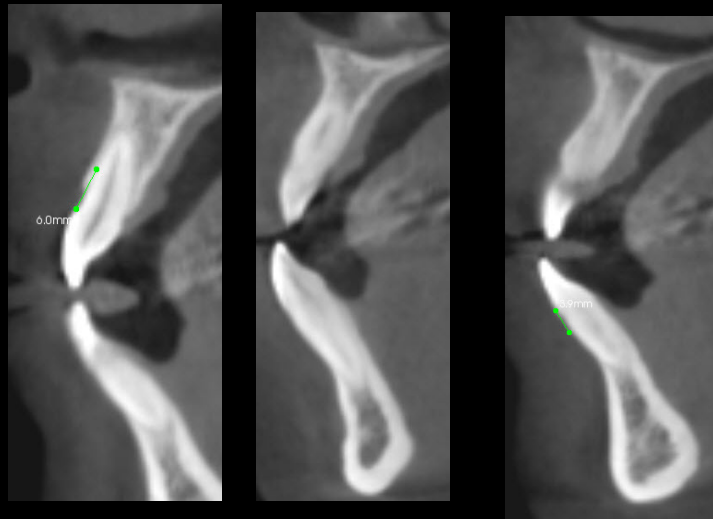


3D Imaging



Thin Facial Bone

CBCT Showing Maxillary Deficiency



Absence of Facial Bone to Correct the Crossbite Relationship

CBCT Imaging of TM Joints

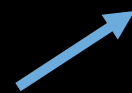


Diagnosis and Treatment Plan

Posterior Cross Bite
Major Midline Deviation

Gingival Recession #6 & 11

Thin/Thin Dentoalveolar Bone Phenotype
Crowding of the Mandibular Incisors



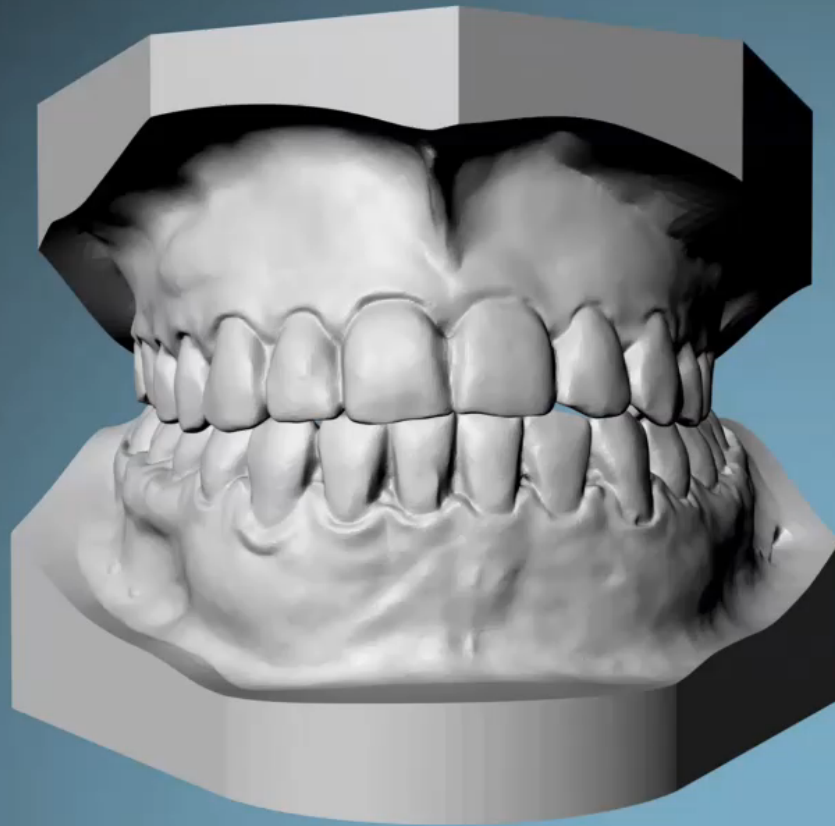
S F O T

+

Root Coverage

Align Teeth

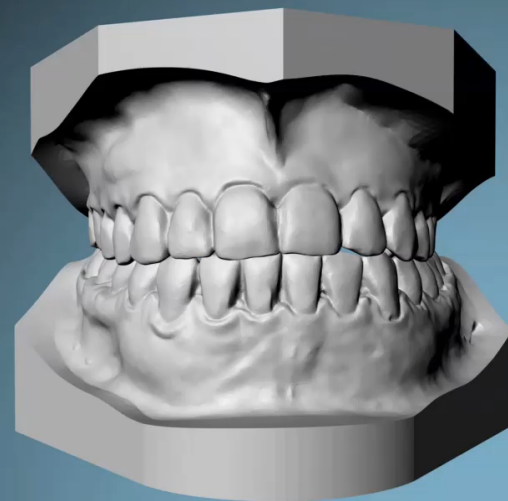
Bite after SFOT



Before



After



Before



After



Total orthodontic treatment time = <1 year

Before

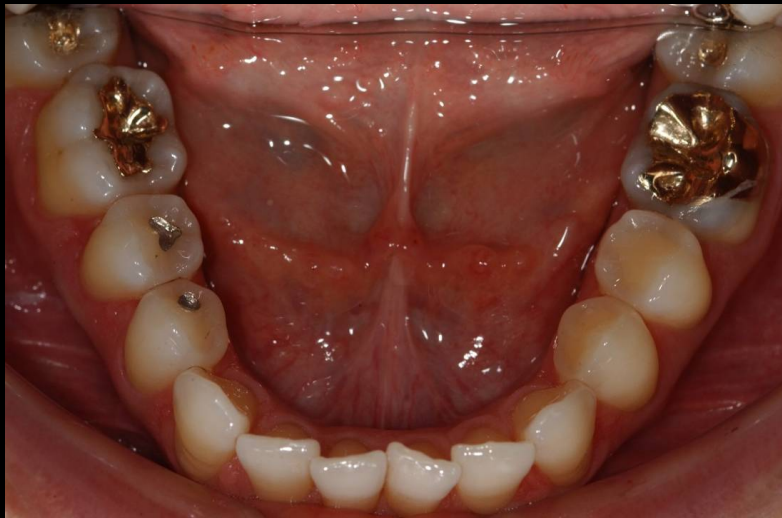


After

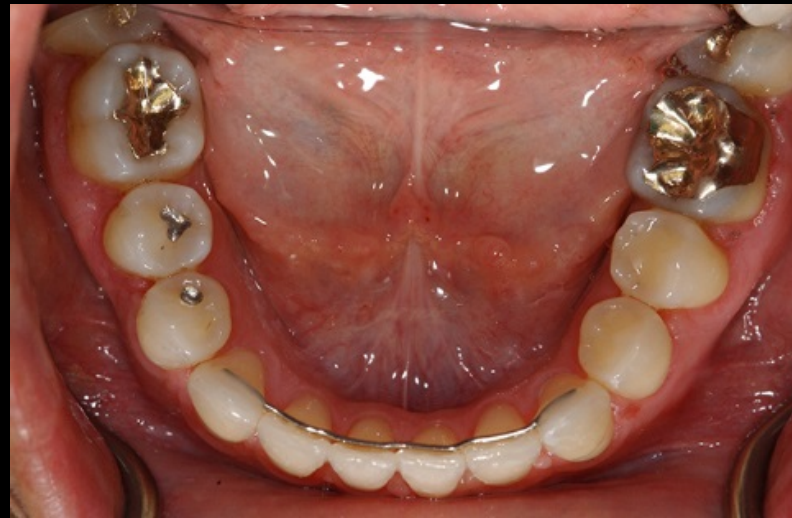


Total orthodontic treatment time = <1 year

Before



After

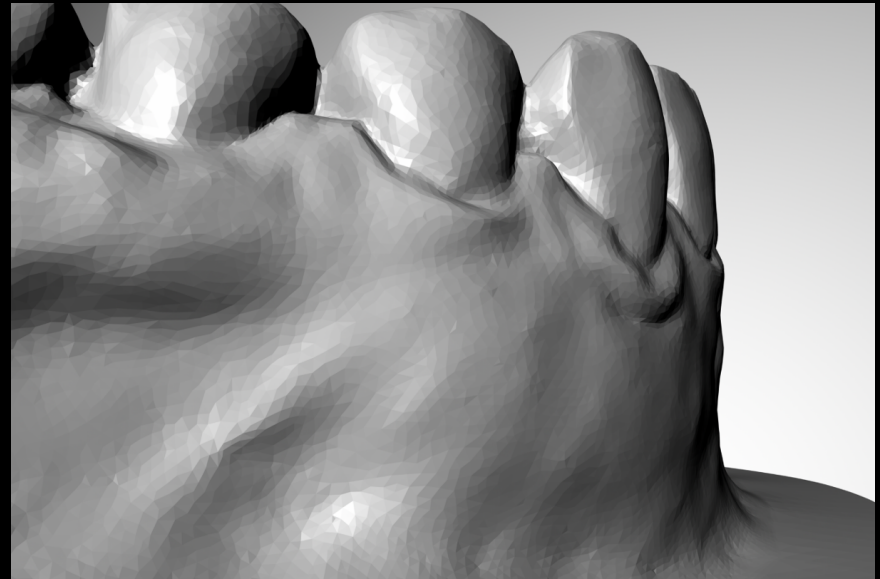


Total orthodontic treatment time = <1 year

Before
SFOT



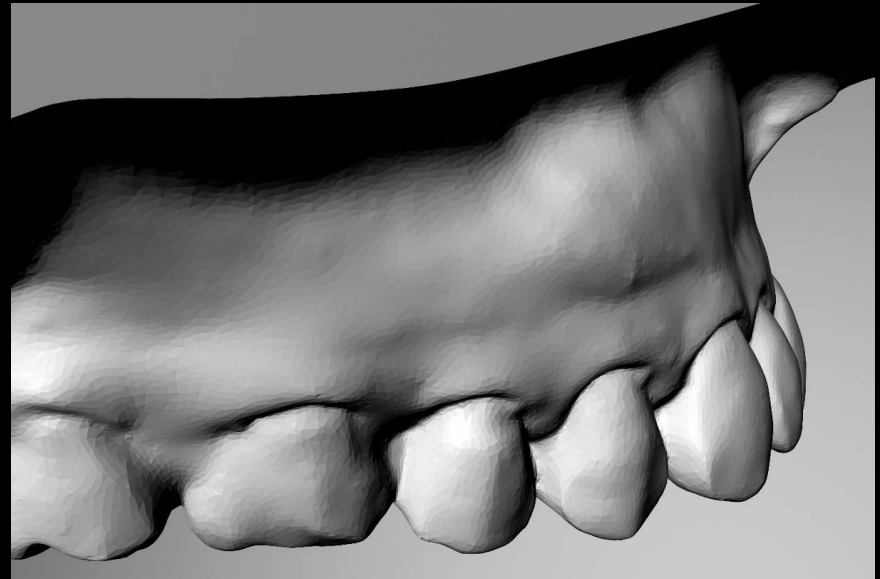
After
SFOT



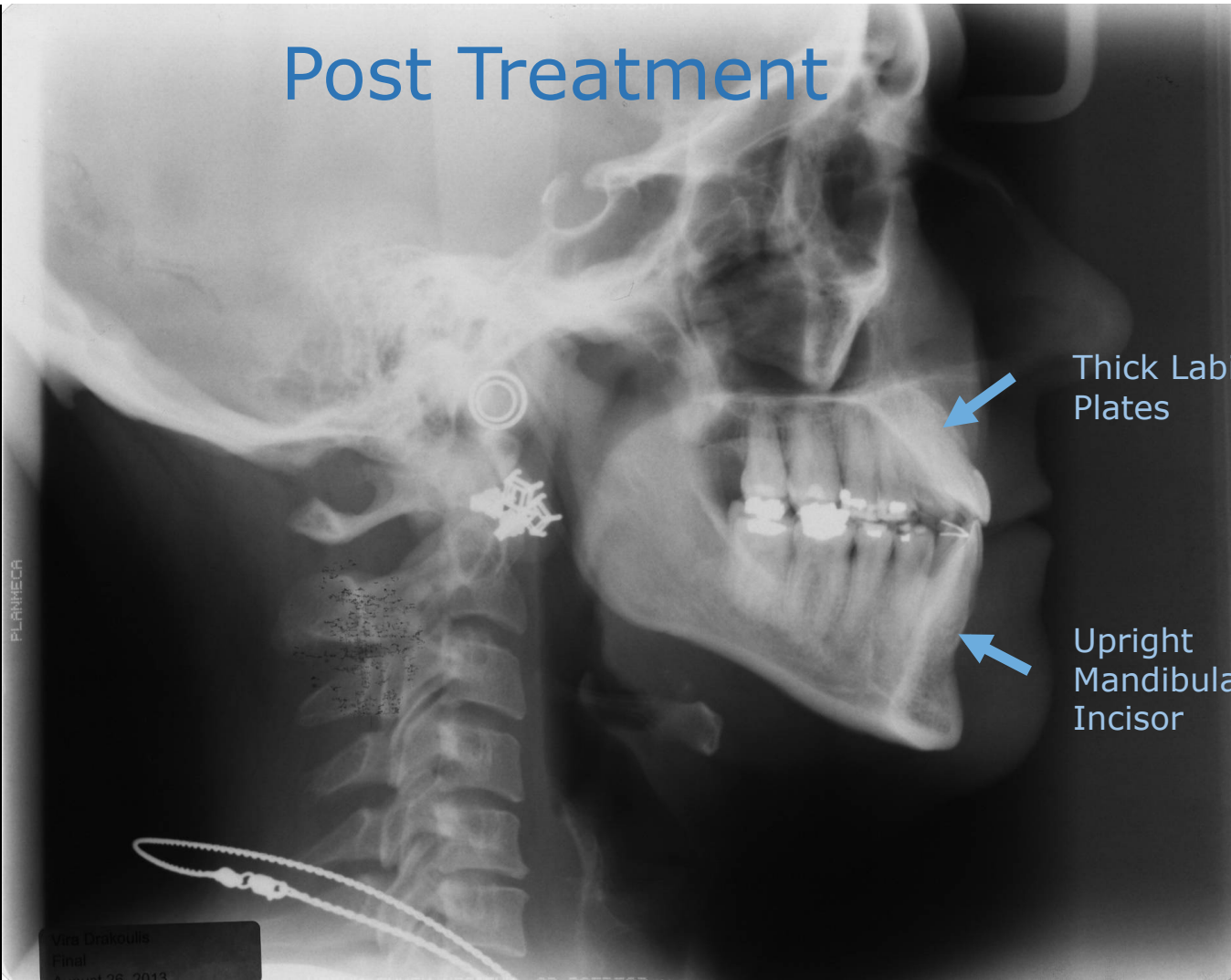
Before
SFOT



After
SFOT



Post Treatment



Thick Labial Plates

Upright Mandibular Incisor

FLANIECA

Vera Drakouli
Final
10/10/2019

Before
SFOT



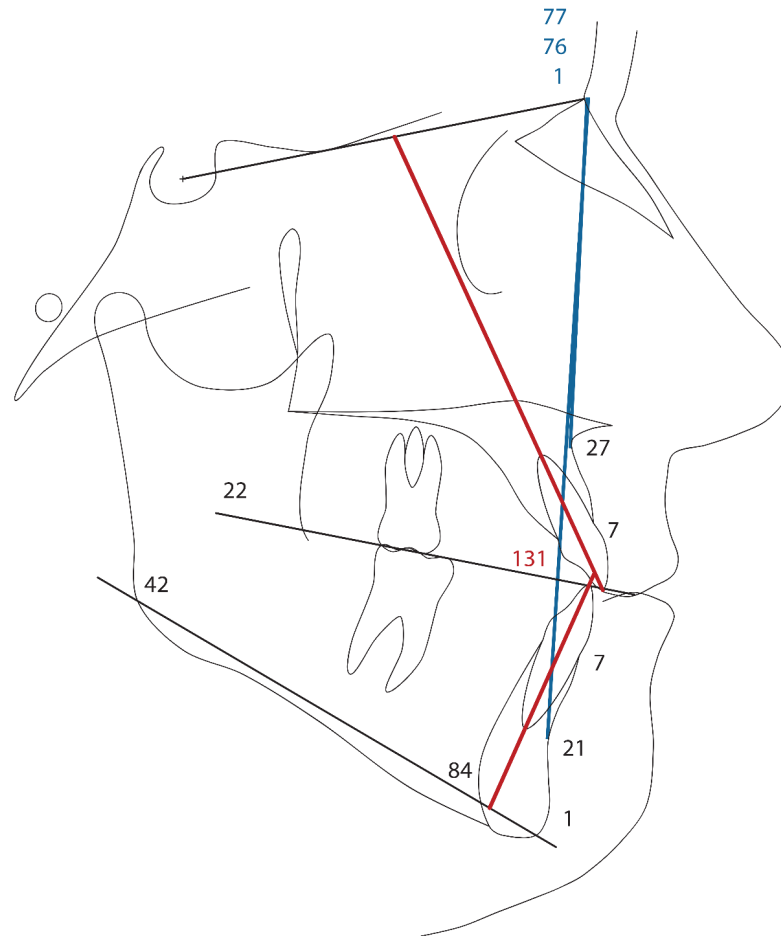
After
SFOT



Vira Drakoulis · Female · 40y 1m · 26-08-2013

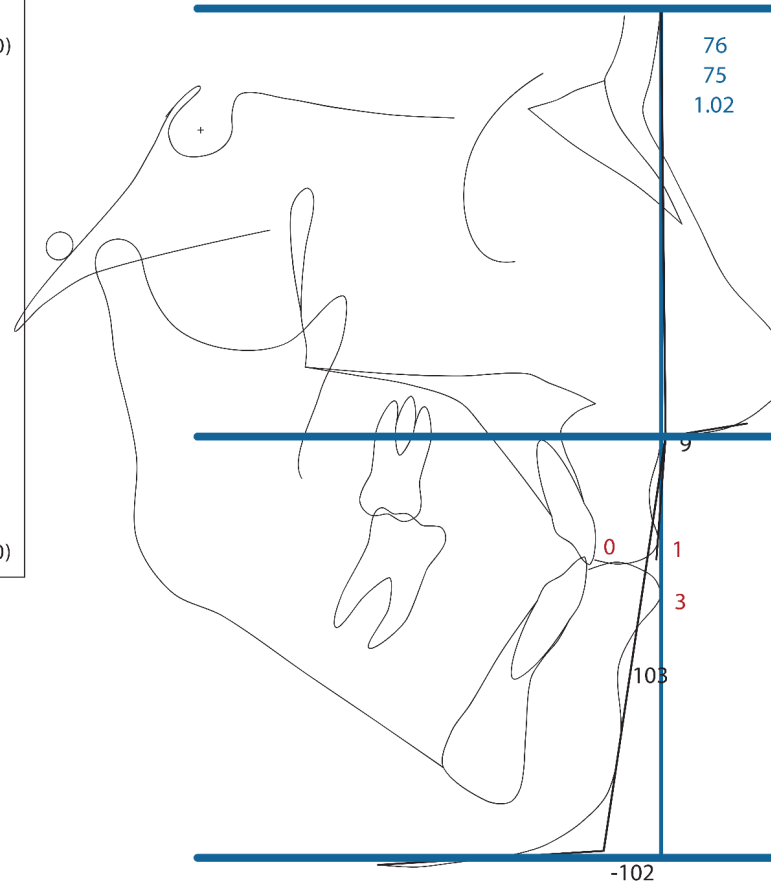
Steiner Analysis

| | | |
|--------------------|--------|---------|
| SNA | 76.7° | (82.0) |
| SNB | 75.5° | (80.0) |
| ANB | 1.2 | (2.0) |
| Upper 1 to NA | 26.7° | (22.0) |
| Upper 1 to NA (mm) | 7.2 mm | (4.0) |
| Lower 1 to NB | 20.8° | (25.0) |
| Lower 1 to NB (mm) | 6.6 mm | (4.0) |
| Pogonion to NB | 0.9 mm | (4.0) |
| Lower 1 to GoGn | 83.6° | (93.0) |
| Interincisal | 131.3° | (135.4) |
| SN to OP | 22.3° | (14.5) |
| SN to GoGn | 41.7° | (32.0) |



Legan Analysis

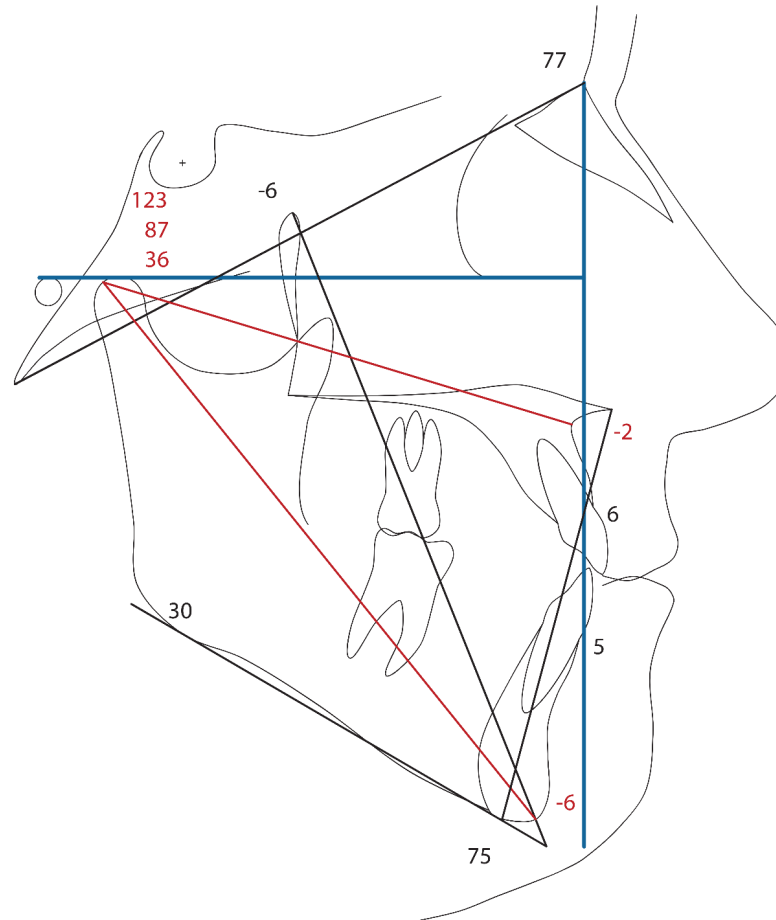
| Facial Form | | |
|-----------------------------------|---------|---------|
| Facial Convexity | 9.1° | (12.0) |
| Maxillary Prognathism | 0.8 mm | (6.0) |
| Mandibular Prognathism | -9.3 mm | (0.0) |
| ufh-hidden | 76.1 mm | |
| lfh-hidden | 74.8 mm | |
| Vertical Height Ratio | 1.02 | (1.0) |
| Lower Face-Throat Angle | -102.1° | (100.0) |
| Lower Vertical Height-Depth Ratio | 1.85 | (1.2) |
| Lip Position and Form | | |
| Nasolabial Angle | 103.4° | (102.0) |
| Upper Lip Protrusion | 1.4 mm | (3.0) |
| Lower Lip Protrusion | 3.3 mm | (2.0) |
| Mentolabial Sulcus | -4.0 mm | (4.0) |
| Vertical Lip-Chin Ratio | 0.43 | (0.5) |
| Maxillary Incisor Exposure | 0.1 mm | (2.0) |
| Interlabial Gap | -0.3 mm | (2.0) |



Vira Drakoulis · Female · 40y 1m · 26-08-2013

McNamara Analysis

| | | |
|----------------------------|----------|---------|
| A Point to Nasion Perp | -2.2 mm | (0.4) |
| SNA Angle | 76.7° | (82.4) |
| Mandibular Length | 122.6 mm | (120.2) |
| Midfacial Length | 87.1 mm | (91.0) |
| Max-Mand Differential | 35.5 | (29.2) |
| Lower Anterior Face Height | 75.4 mm | (66.7) |
| Mandibular Plane Angle | 30.3° | (22.7) |
| Facial Axis Angle | -6.1° | (0.2) |
| Pogonion to Nasion Perp | -6.3 mm | (-1.8) |
| Upper 1 to A Point Perp | 6.4 mm | (5.4) |
| Lower 1 to A-Pg | 4.7 mm | (2.7) |

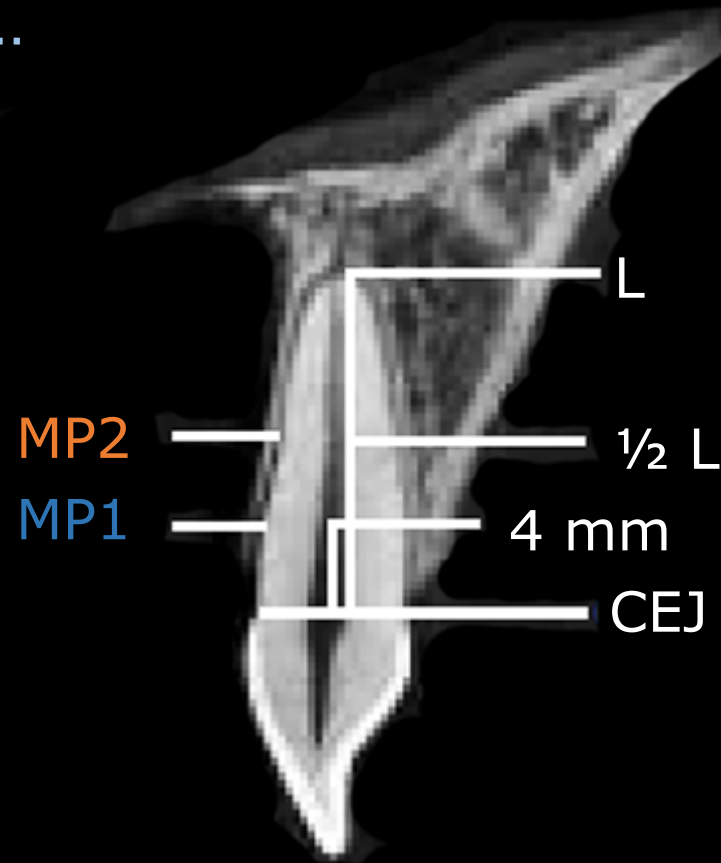


The Human Problem

The Anatomic Limits set by the Cortical Plates of the Alveolus at the Level of the Incisor Apices may be regarded as the “Orthodontic Walls”

Handelman, C.S. Angle Orthod 1996

Thickness of the Anterior Maxillary Facial Bone Wall...



Braut et al 2011

MP2

MP1

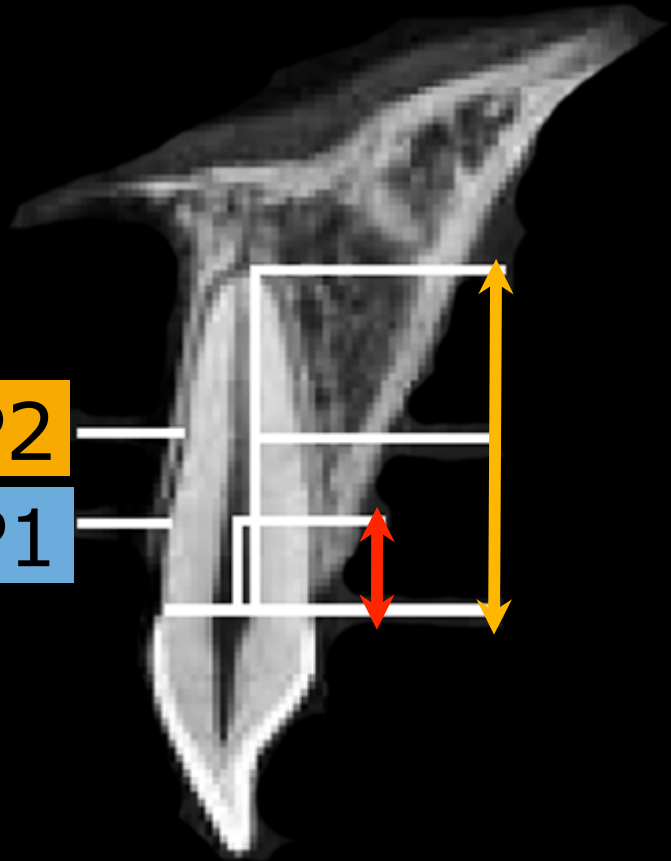
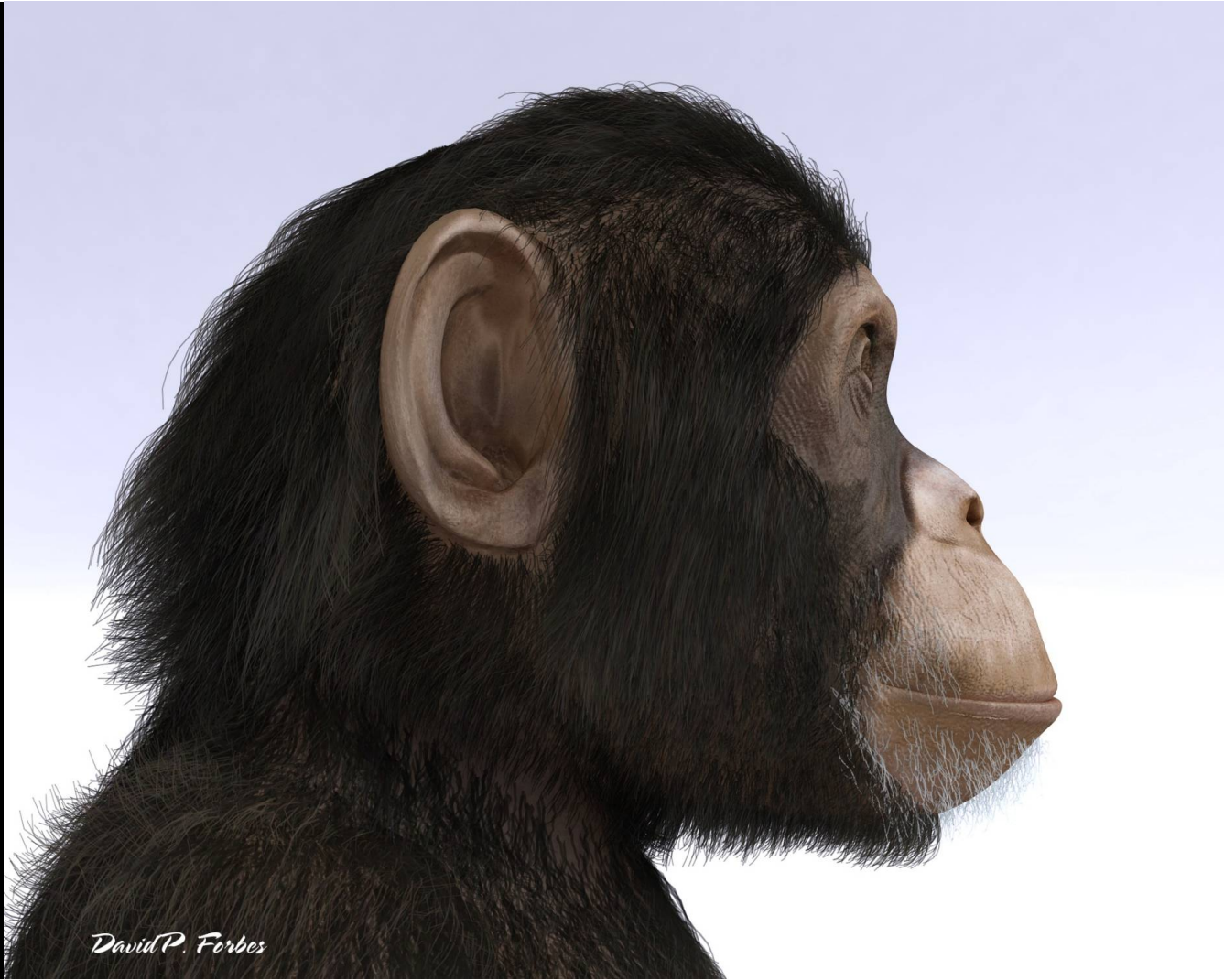


Table 2**Frequency distribution (%) of examined teeth according to the thickness of the facial bone walls at MP1**

| | Missing bone wall | Bone wall thickness < 1mm | Bone Wall thickness \geq 1mm |
|------------------------|--------------------------|-------------------------------------|--|
| Central Incisor | 27.5 | 67.9 | 4.6 |
| Lateral Incisor | 23.0 | 65.5 | 11.5 |
| Canine | 31.7 | 59.7 | 8.6 |
| First Premolar | 17.5 | 55.0 | 27.5 |
| Total | 25.7 | 62.9 | 11.4 |

Table 3**Frequency distribution (%) of examined teeth according to the thickness of the facial bone walls at MP2**

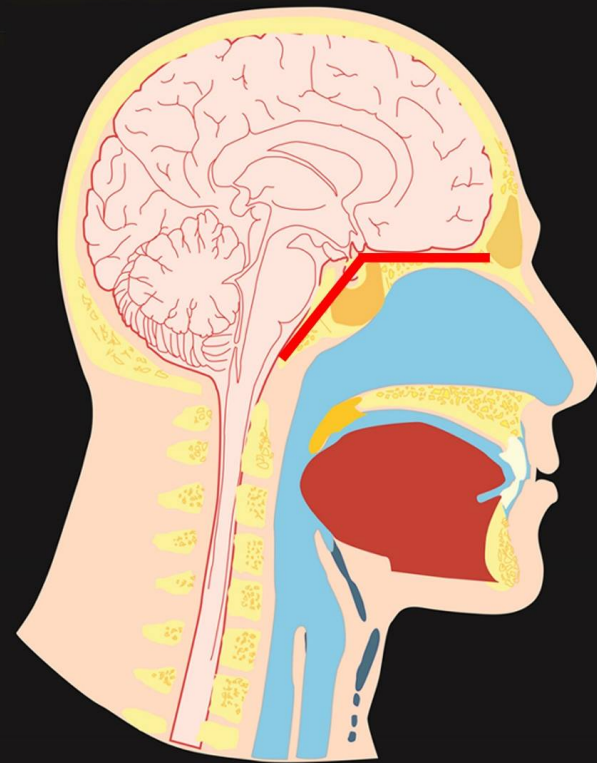
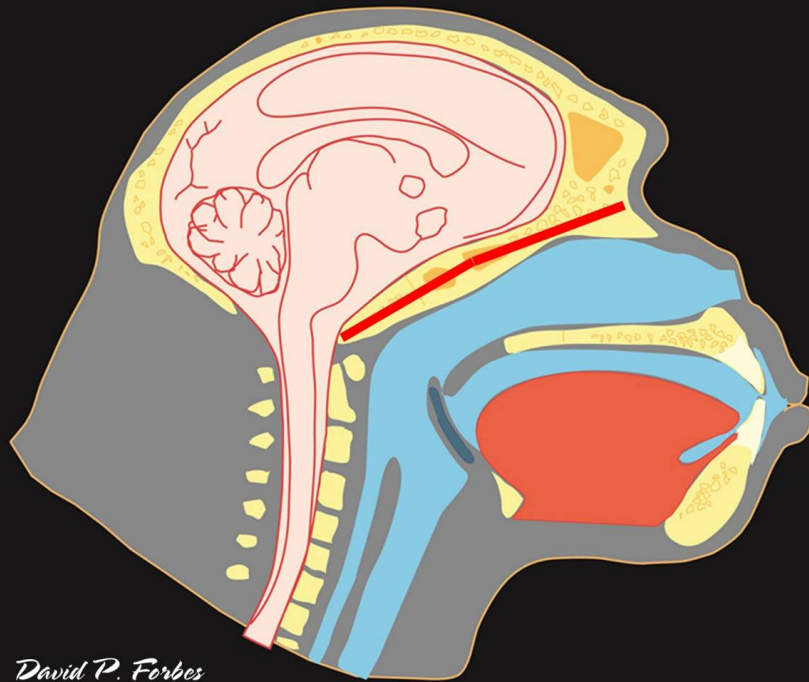
| | Missing bone wall | Bone wall thickness < 1mm | Bone Wall thickness \geq 1mm |
|------------------------|--------------------------|-------------------------------------|--|
| Central Incisor | 4.6 | 89.3 | 6.1 |
| Lateral Incisor | 9.5 | 83.1 | 7.4 |
| Canine | 9.4 | 82.0 | 8.6 |
| First Premolar | 21.3 | 56.3 | 22.5 |
| Total | 10.0 | 80.1 | 9.8 |



David P. Forbes



Klinorynchy





David P. Forbes

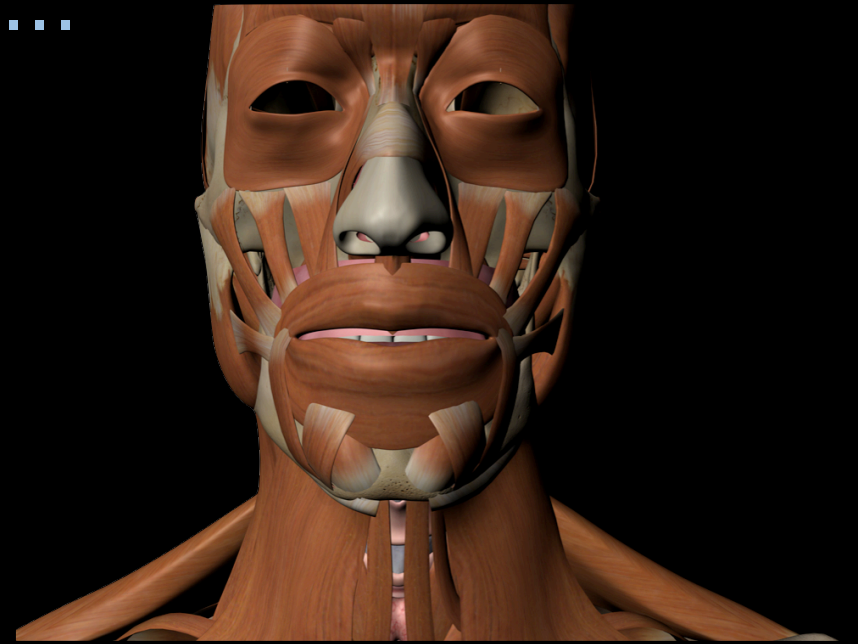
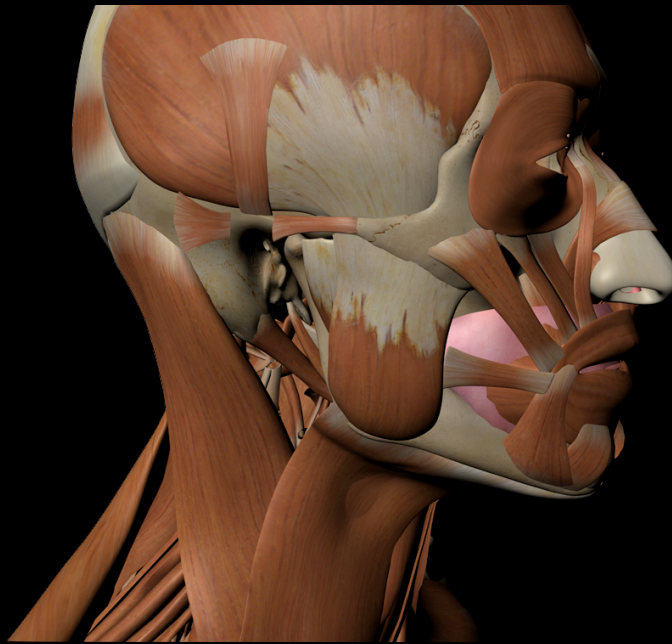


David P. Forbes

Resorptive Fields

Enlow D., Hans M., *Essentials of Facial Growth* 1996

Muscle pressure continues
to exert a slow resorptive
effect...



David P. Forbes

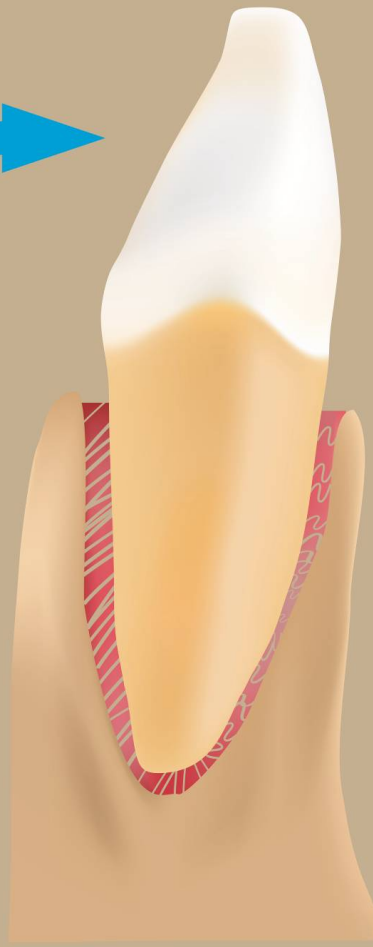


David P. Forbes

After growth the Facial Bone covering the dentition continues to diminish; mainly dependent on the muscle strength

Moyers, R., Enlow D., Hans M., *Handbook of Orthodontics* 1988

Tooth movement



Tension

Compression

Dave Forbes

The International Journal of
**Periodontics &
Restorative
Dentistry**



Volume 33 • Number 3
May/June 2013

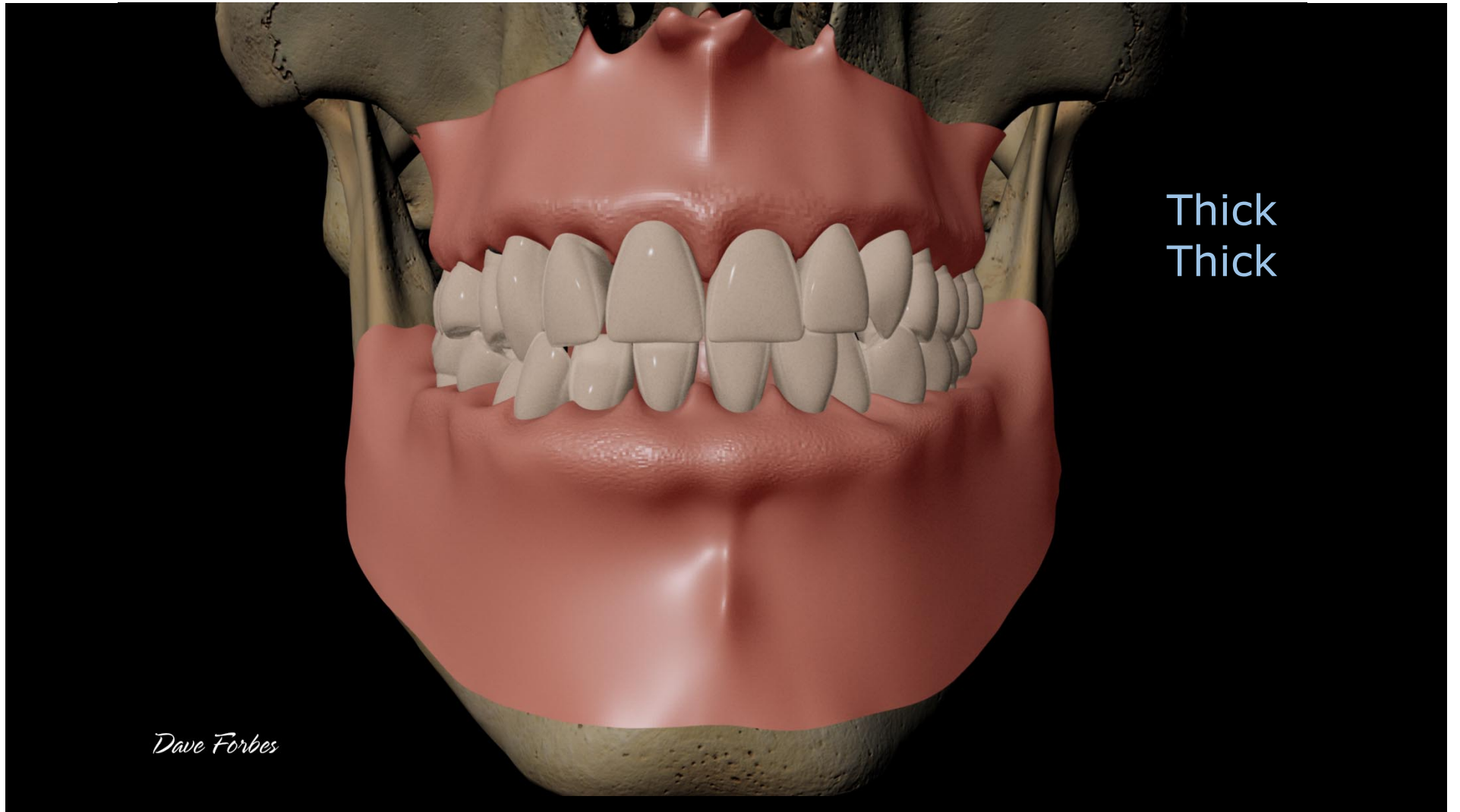
 QUINTESSENCE PUBLISHING

George Mandelaris, DDS, MS
Brian Vence, DDS
Alan Rosenfeld, DDS
David Forbes, DDS, PhD

A Classification System for
Crestal and Radicular
Dentoalveolar Bone
Phenotypes



David P. Forbes

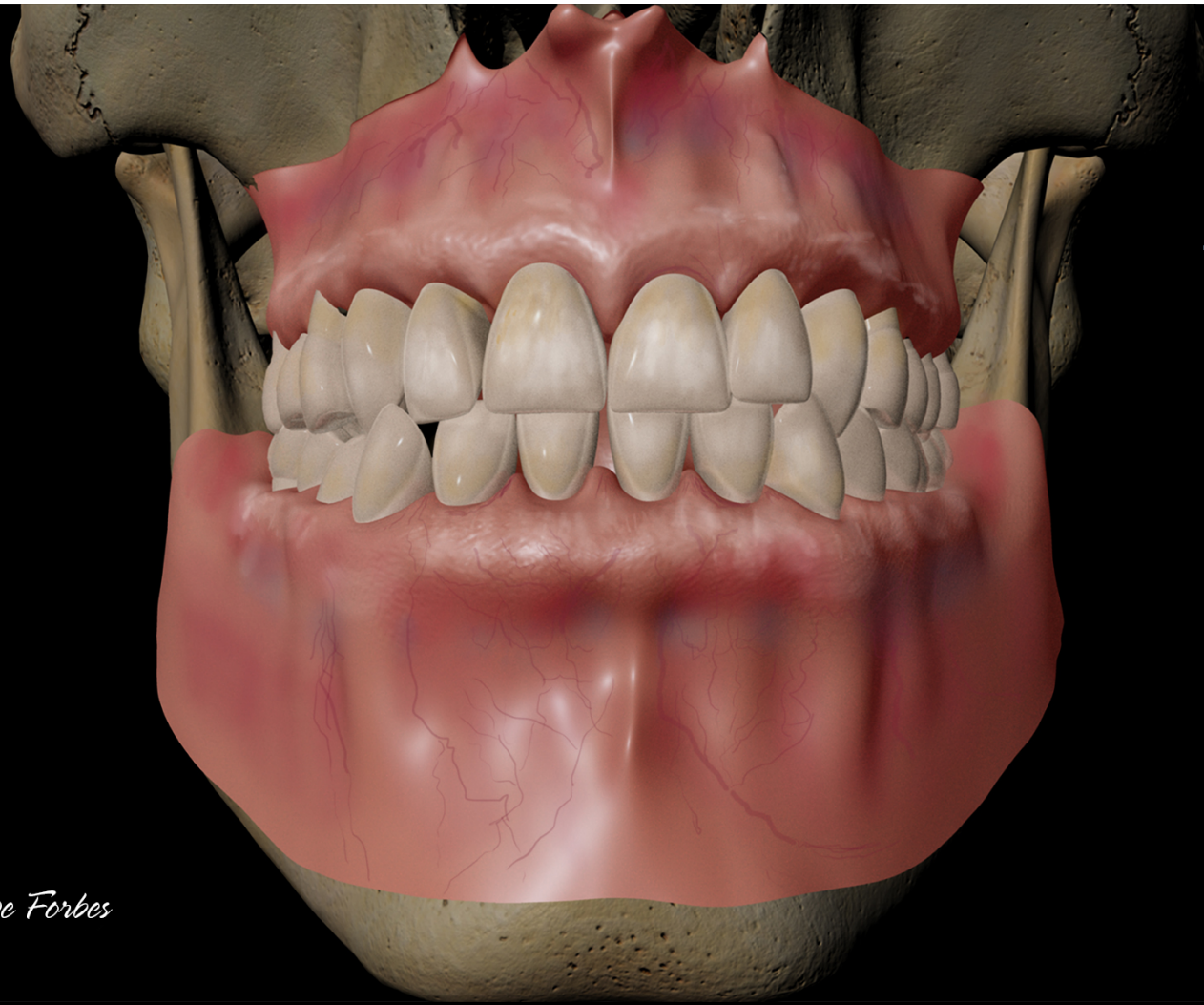


Thick
Thick

Dave Forbes

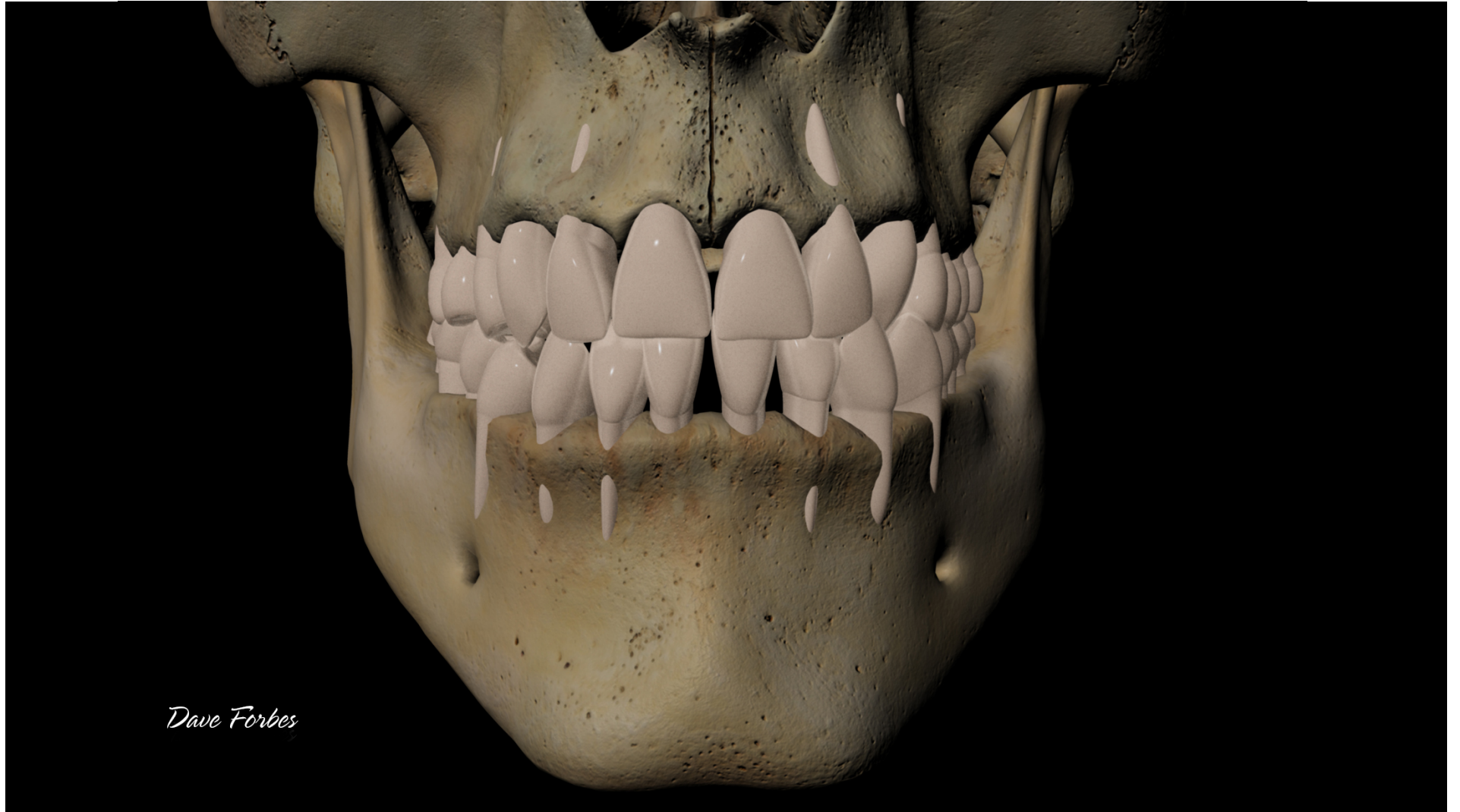


Dave Forbes



Thick Thin

Dave Forbes



Dave Forbes

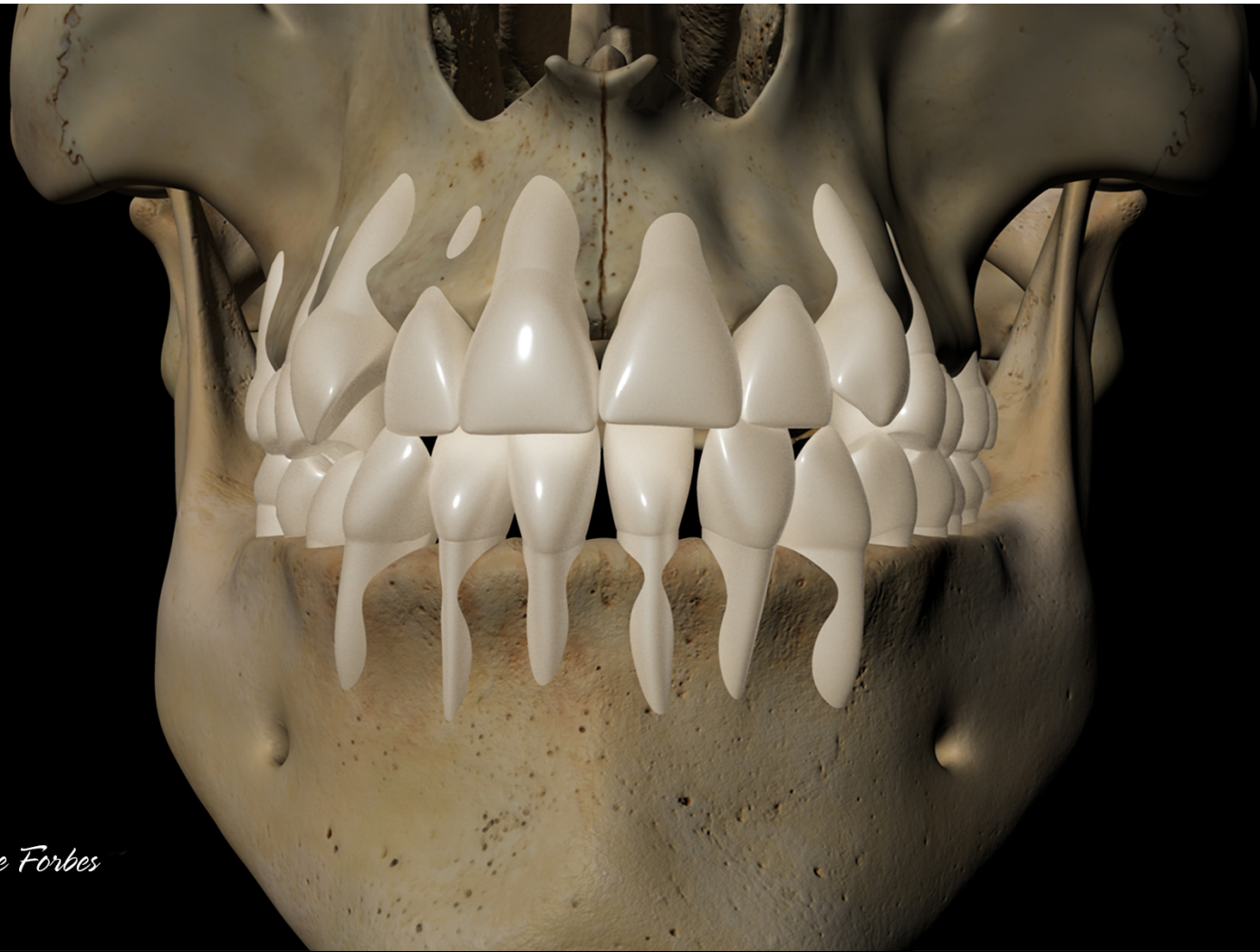
Snake Pit





Thin
Thin

Dave Forbes



Dave Forbes

Thin Thick

Dave Forbes





Dave Forbes

The Anatomic Limits set by the Cortical Plates of the Alveolus at the Level of the Incisor Apices may be regarded as the “Orthodontic Walls”

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