



# PALATAL EXPANSION WITH SKELETAL ANCHORAGE: PERIODONTAL AND AIRWAY RATIONALE

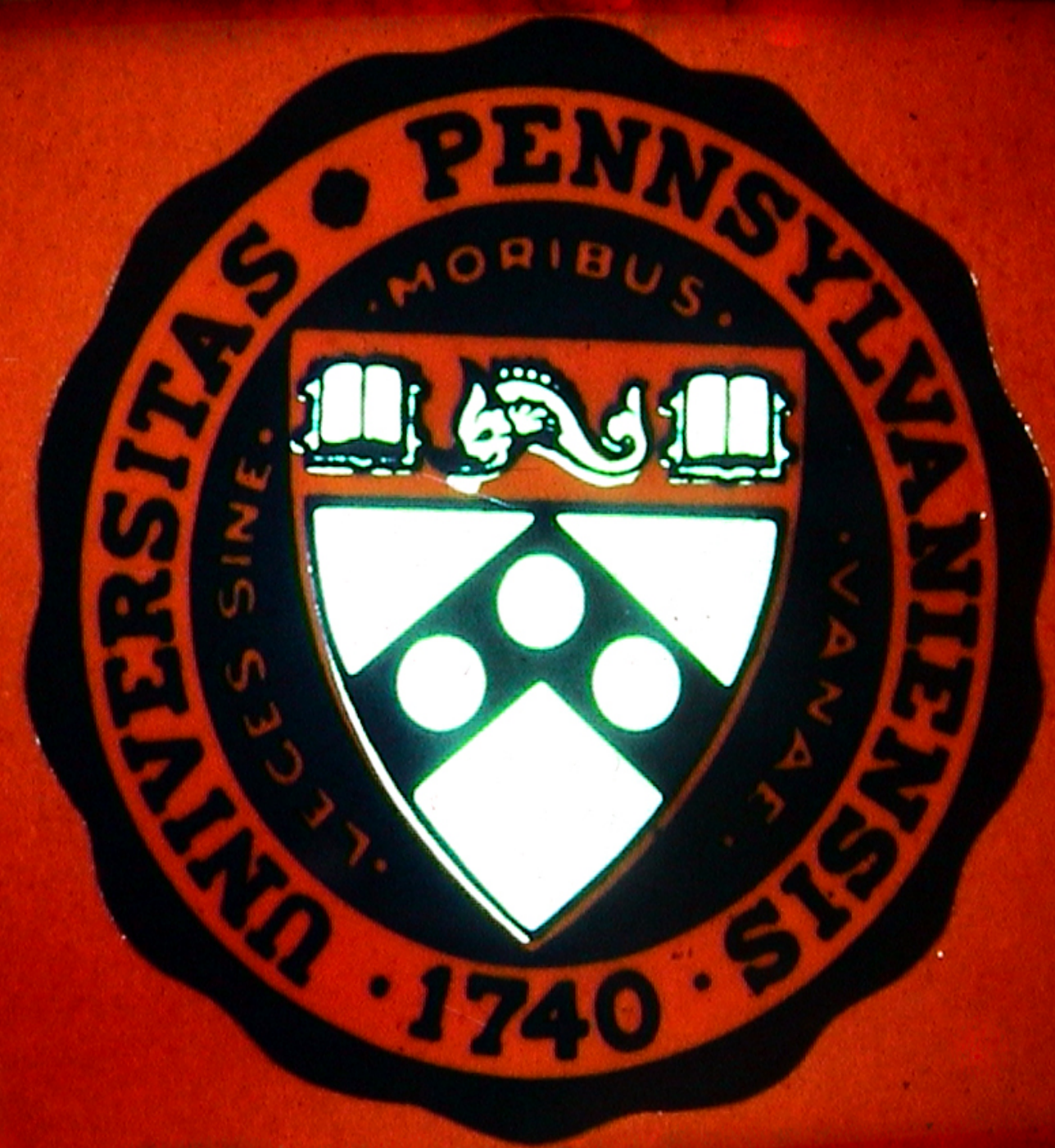
MARIANNA EVANS, DMD

BOARD CERTIFIED PERIODONTIST AND ORTHODONTIST  
PRIVATE PRACTICE, NEWTOWN SQUARE, GLEN MILLS, PA

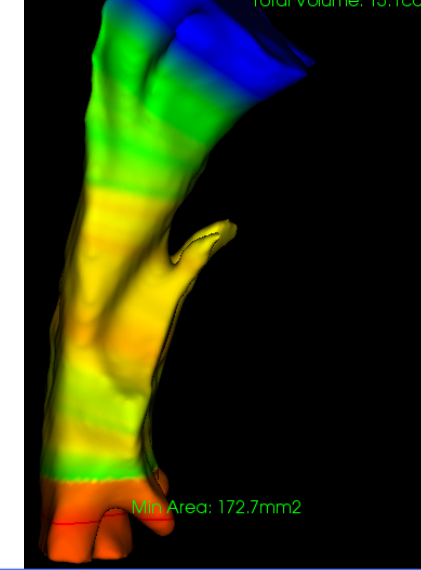
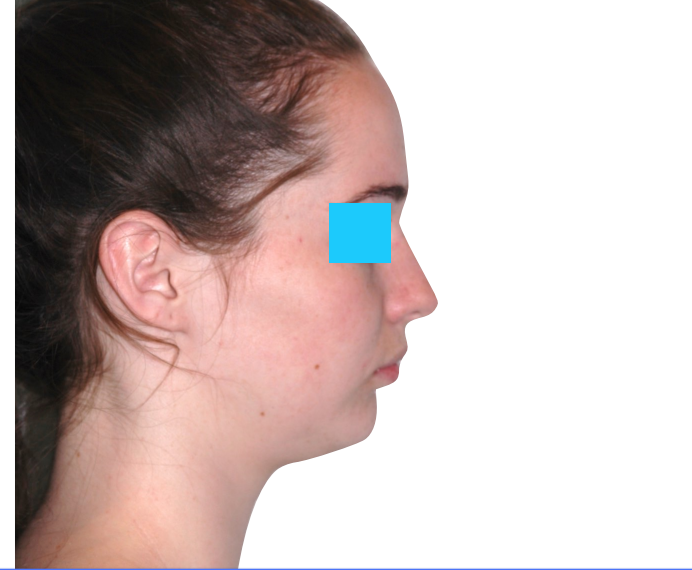
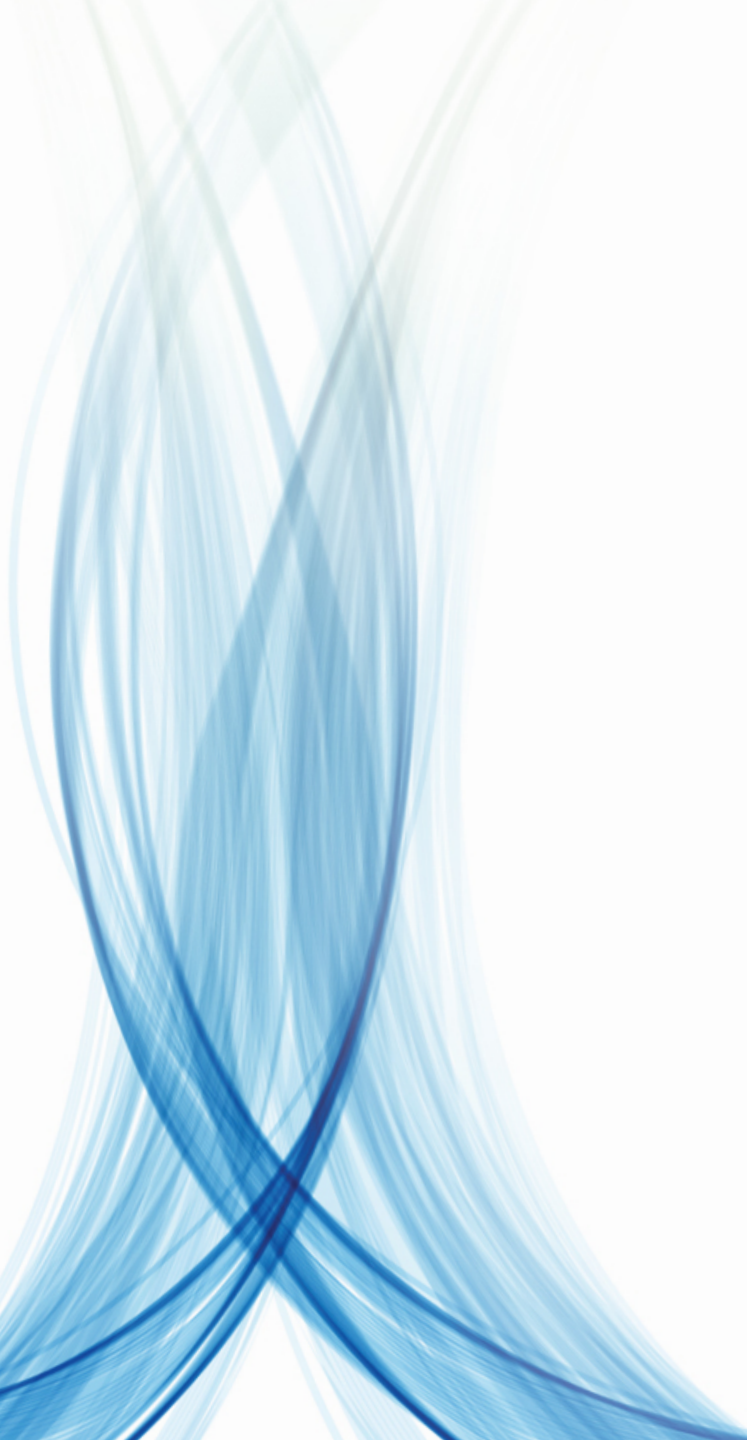
[MEVANS@INFINITYORTHOPERIO.COM](mailto:MEVANS@INFINITYORTHOPERIO.COM)



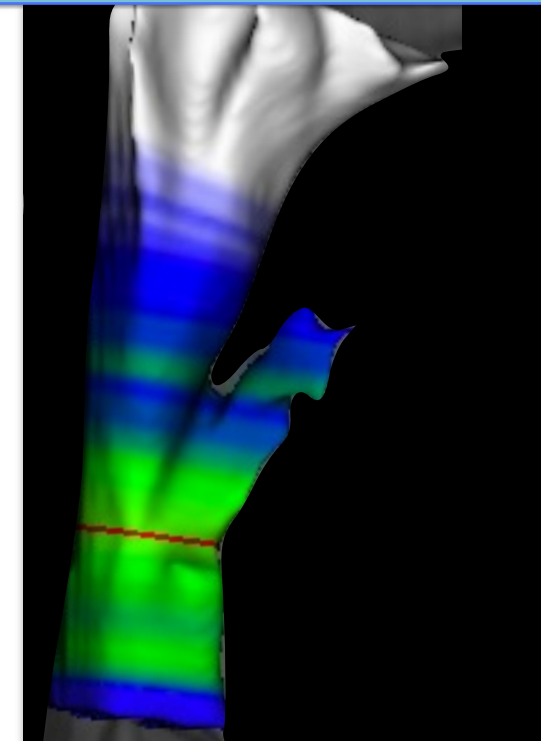
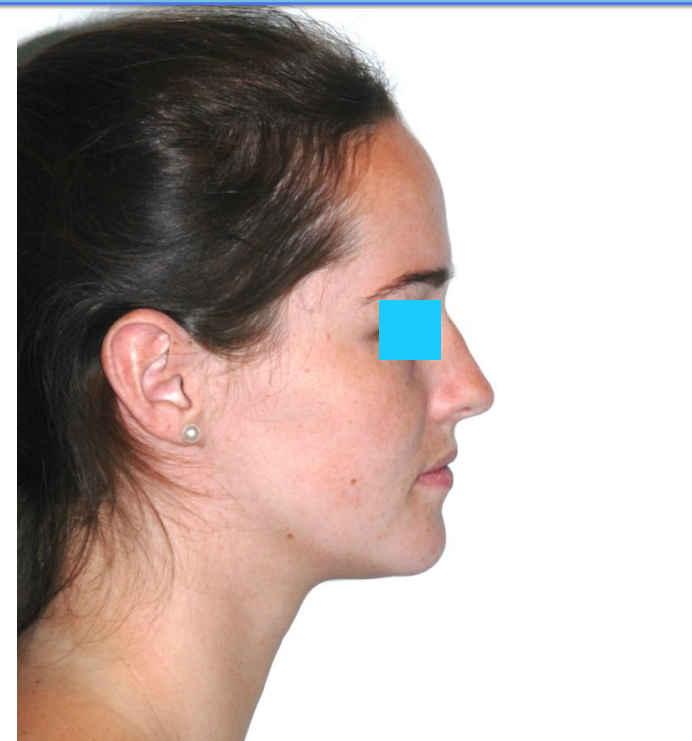








ADDRESSING THE WHOLE SYSTEM...







EXPANDING LIFE INTO YOUR PATIENTS...

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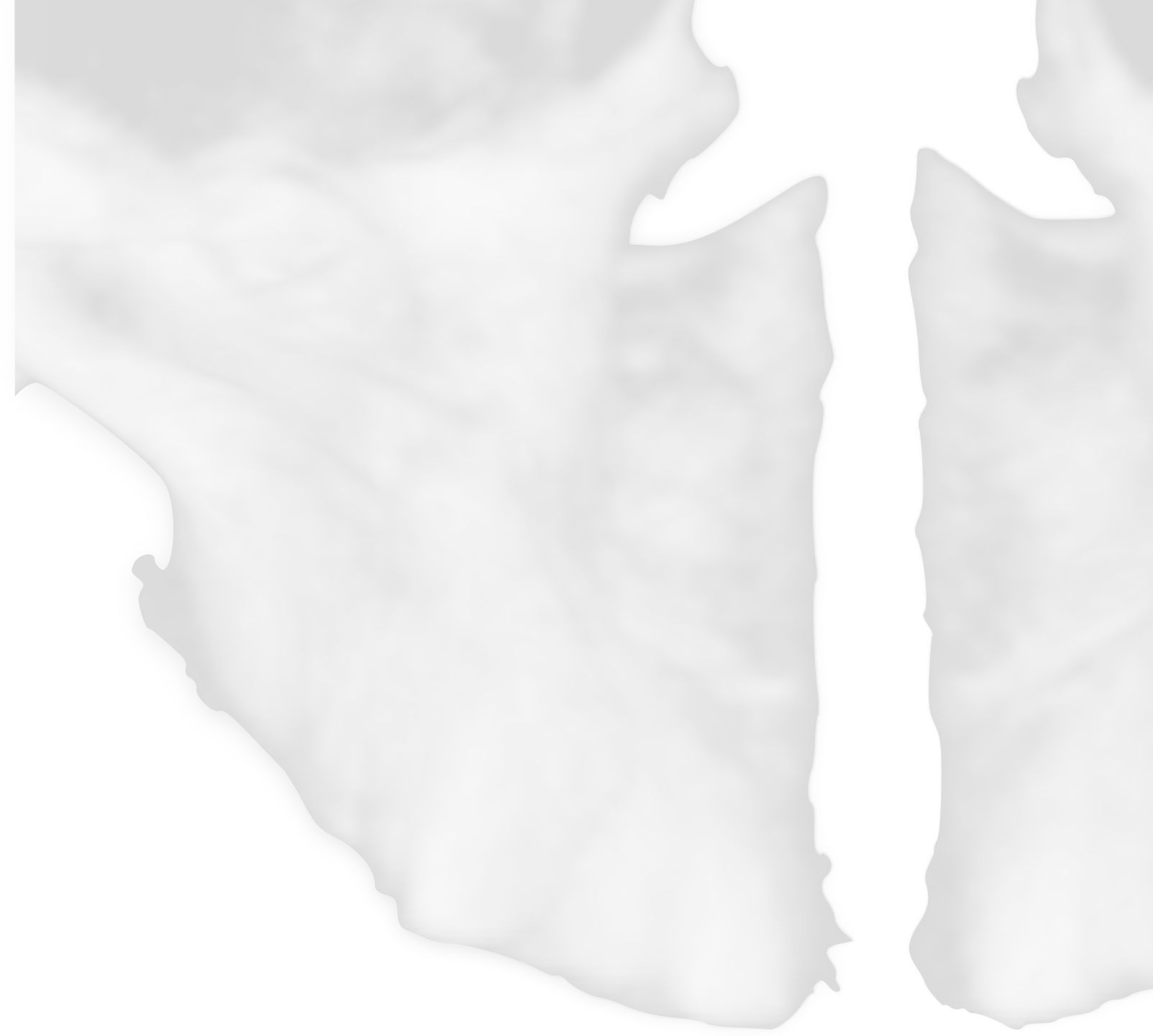
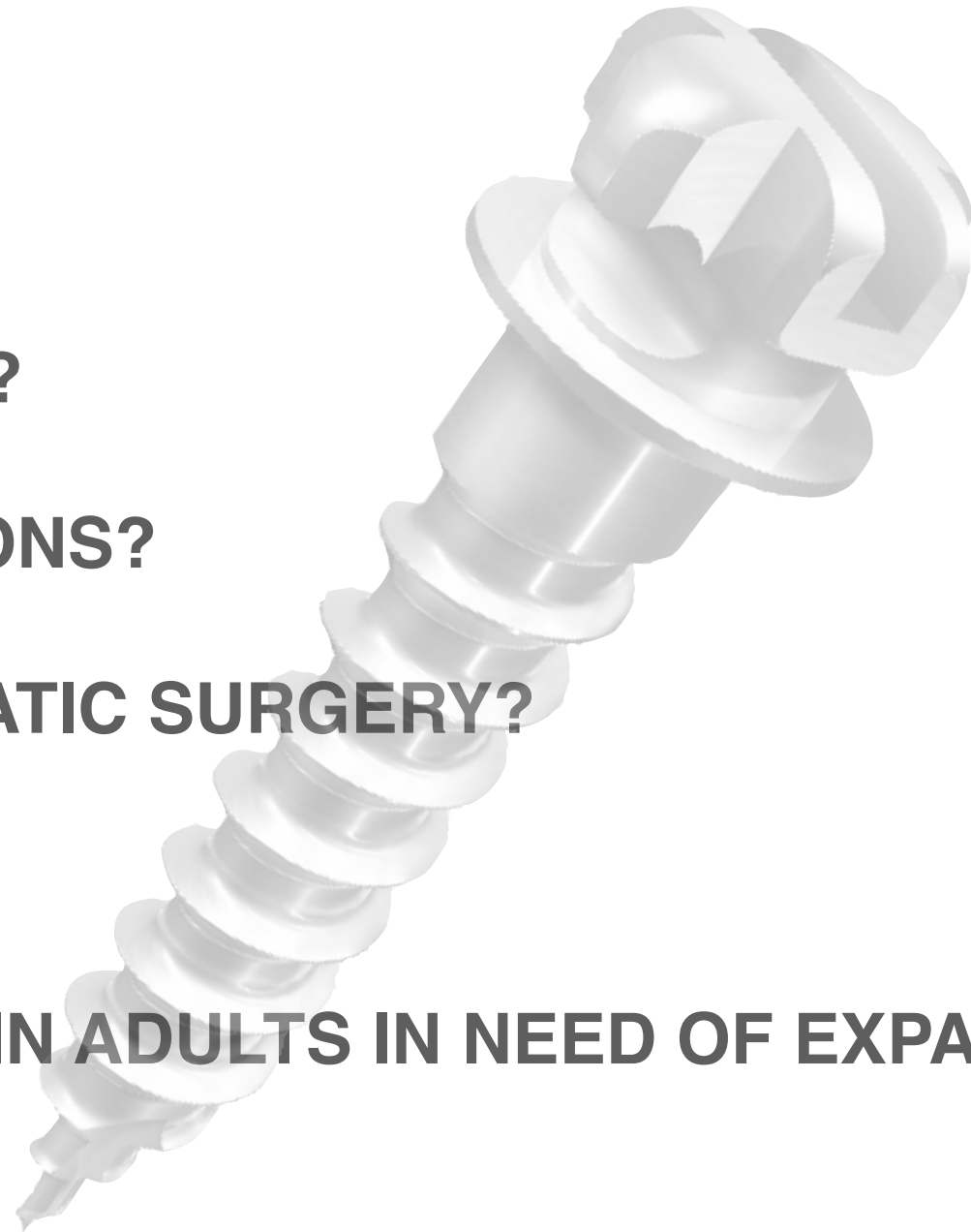
## TREATMENT GOALS:

1. FACIAL ESTHETICS.
2. UPRIGHT TEETH IN BASAL BONE TO RECEIVE AXIAL LOADING.
3. MAXIMUM INTERCUSPATION.
4. MINIMAL CR/CO DISCREPANCIES.
5. AIRWAY PROTECTIVE RESULT.



## **THE CASE FOR TADS:**

- 1. BETTER OCCLUSAL STABILITY?**
- 2. AVOID OR MINIMIZE EXTRACTIONS?**
- 3. AVOID OR MINIMIZE ORTHOGNATIC SURGERY?**
- 4. SHORTER TREATMENT TIME?**
- 5. GREATER CASE ACCEPTANCE IN ADULTS IN NEED OF EXPANSION?**





# PERIODONTAL AUGMENTATION: SFOT/POPA/PAOO...





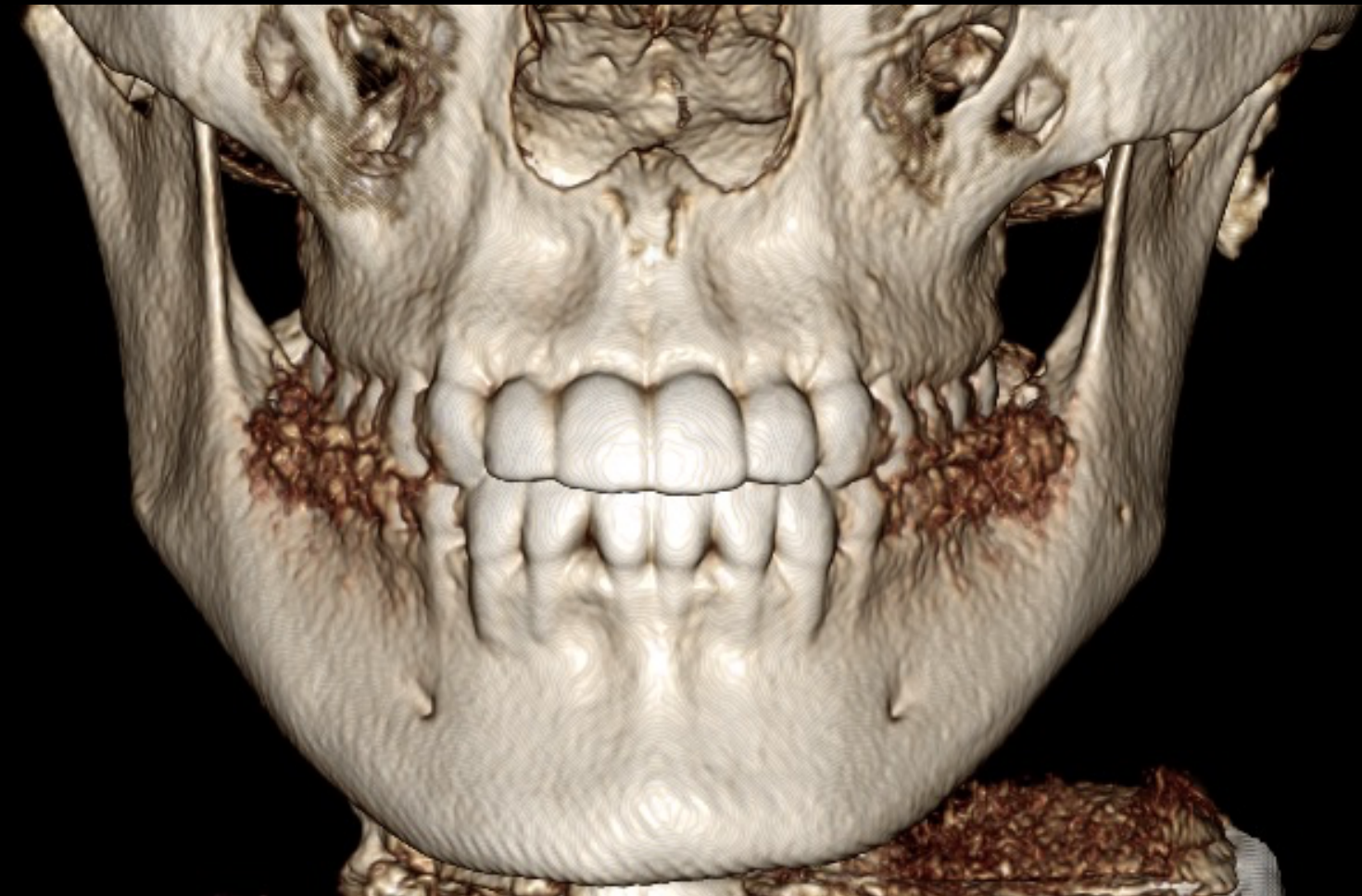
**BEFORE**



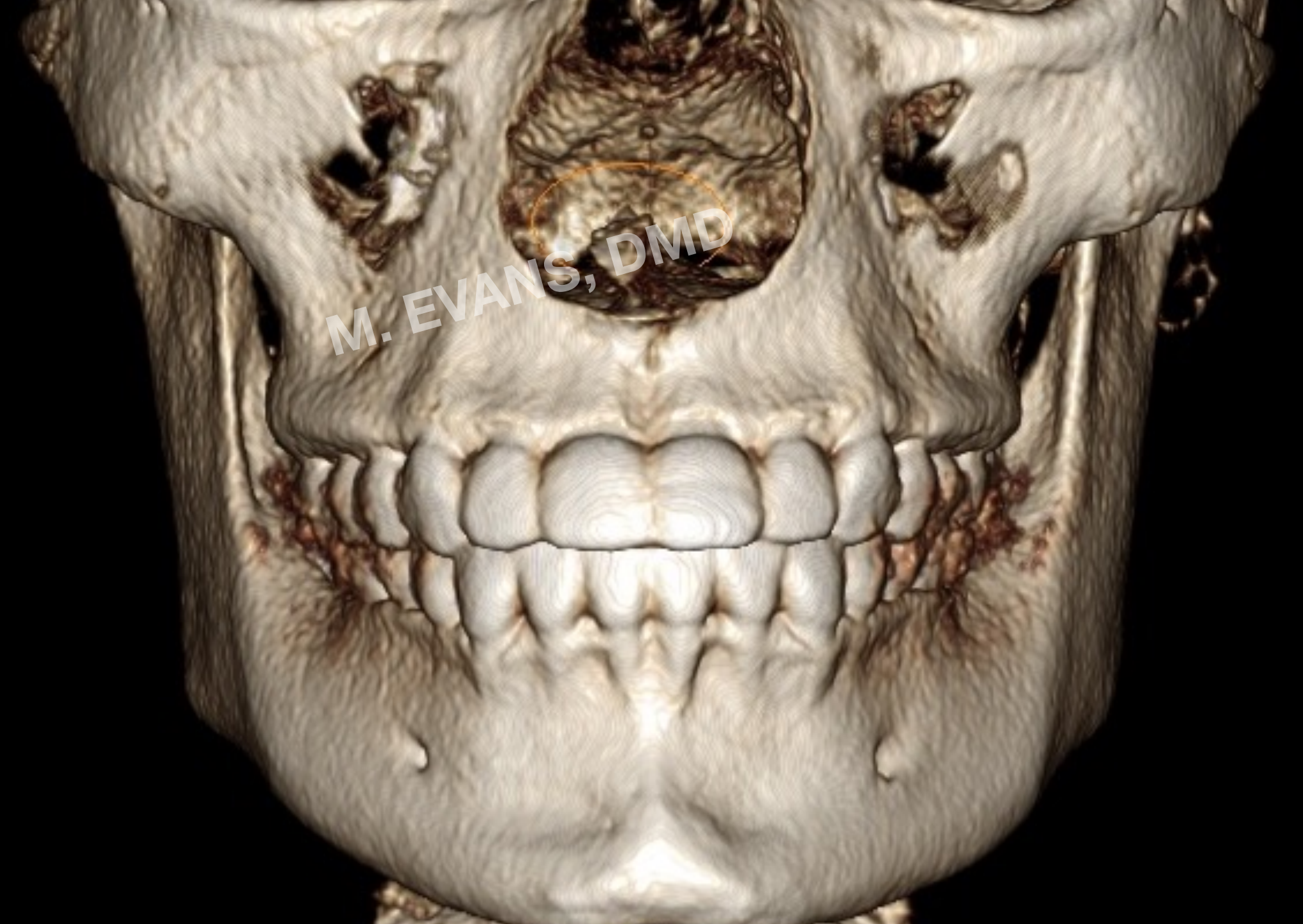
**2 WEEKS AFTER EXPANSION**



**AFTER DEBONDING**

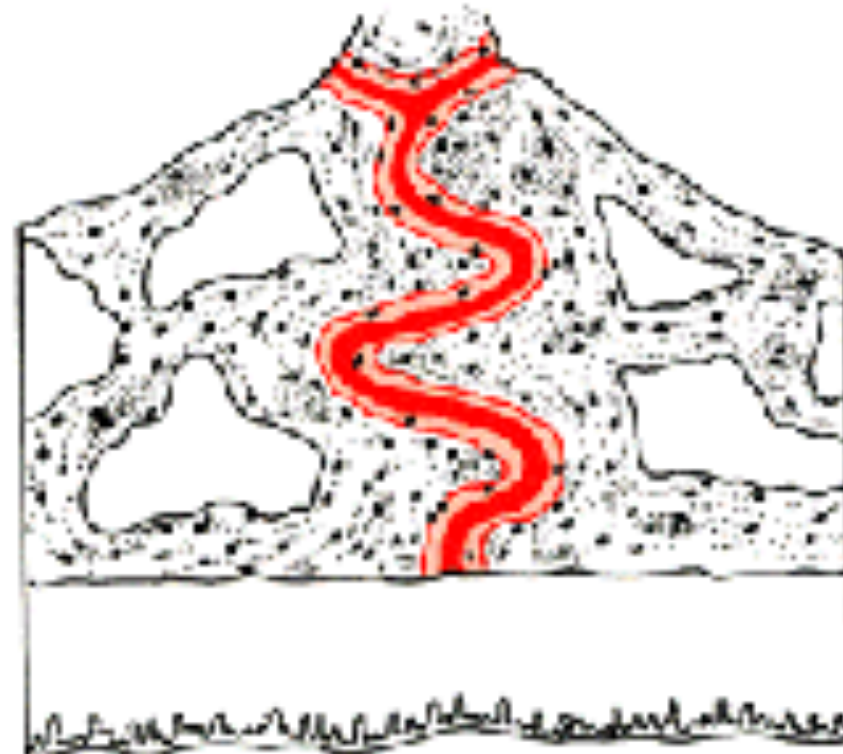
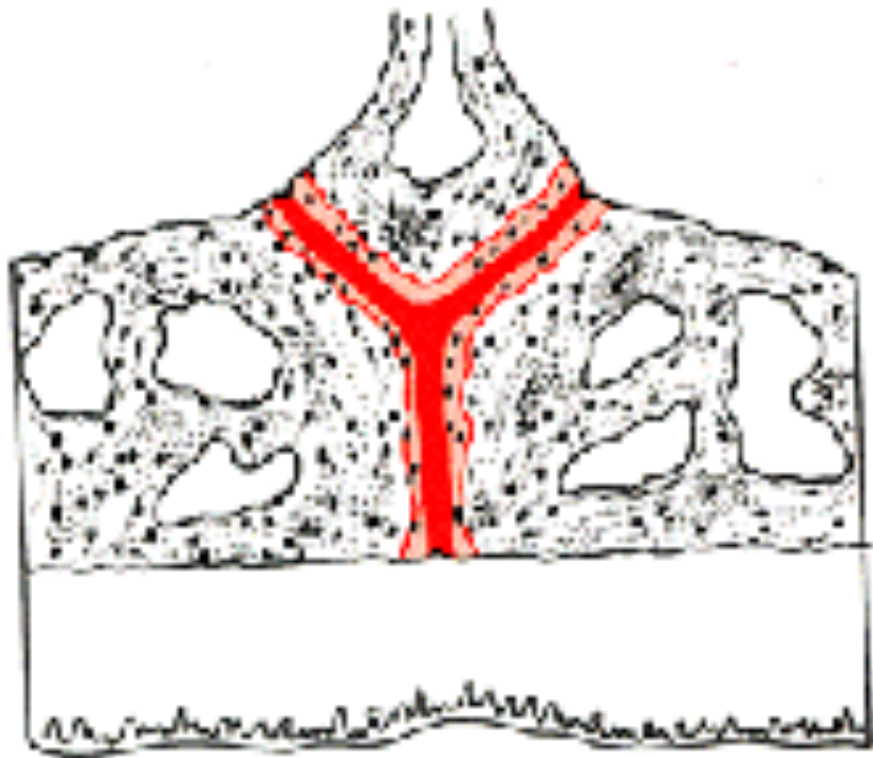








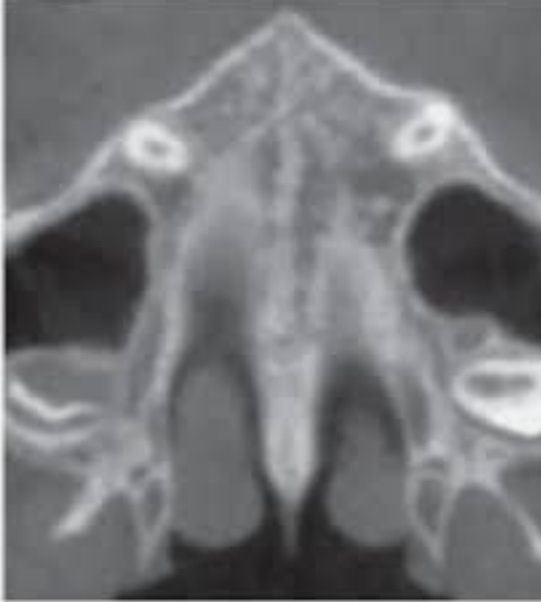
## PALATAL SUTURE INTERDIGITATION WITH AGE (AGE 0-18)



*Melsen B.; AJO 1975*



**LESS THAN 50% OSSIFICATION OF THE MIDPALATAL SUTURE IN YOUNG ADULTS (20-25 Y.O.)**



## **COMPUTER TOMOGRAPHY VERSUS OCCLUSAL FILM STUDY**

**Thadani M. et al; J of Indian Academy of Oral Medicine and Radiology, 2010;22(2):81-87**



Eur J Orthod. 2001 Apr;23(2):105-14.

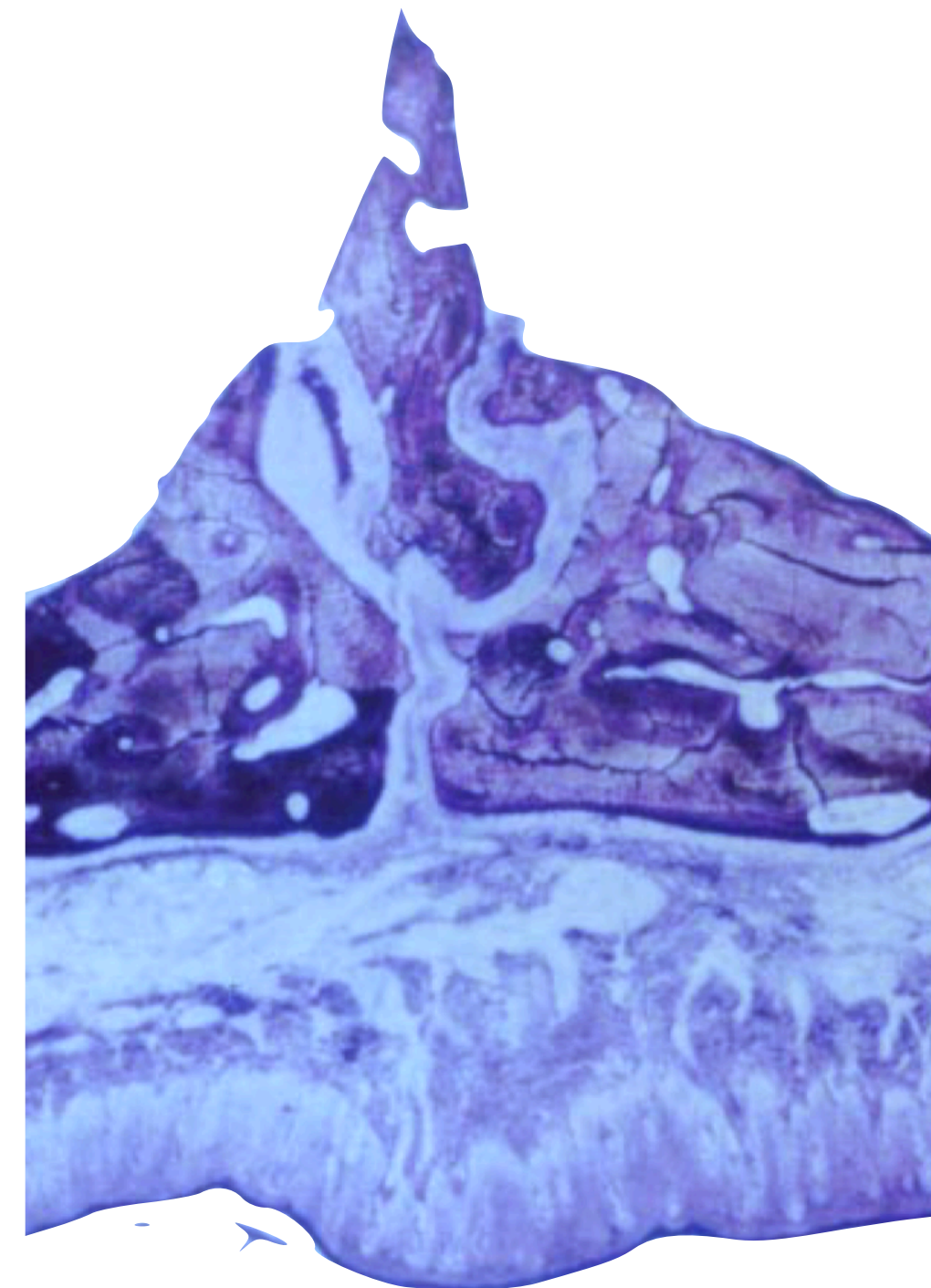
## **The mid-palatal suture in young adults. A radiological-histological investigation.**

Wehrbein H<sup>1</sup>, Yildizhan F.

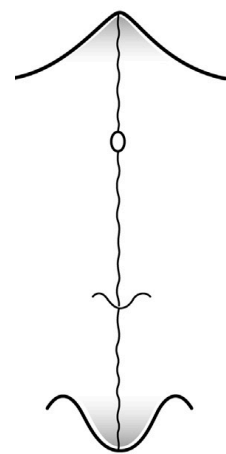
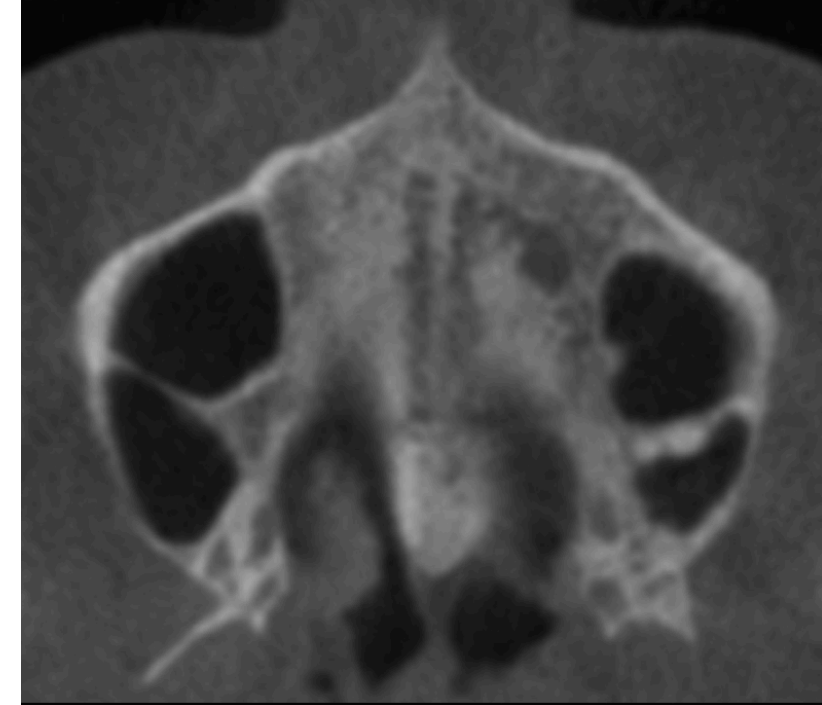
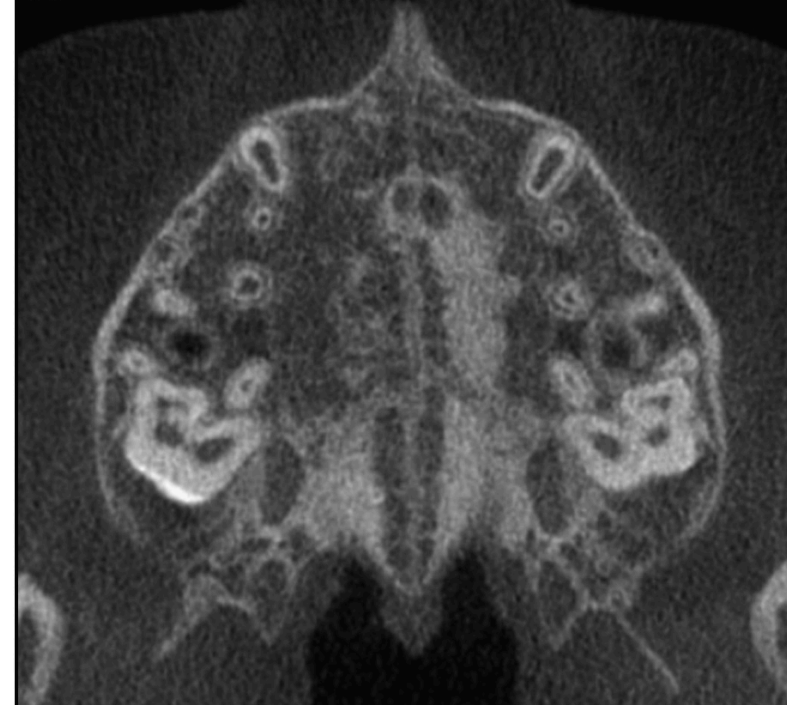
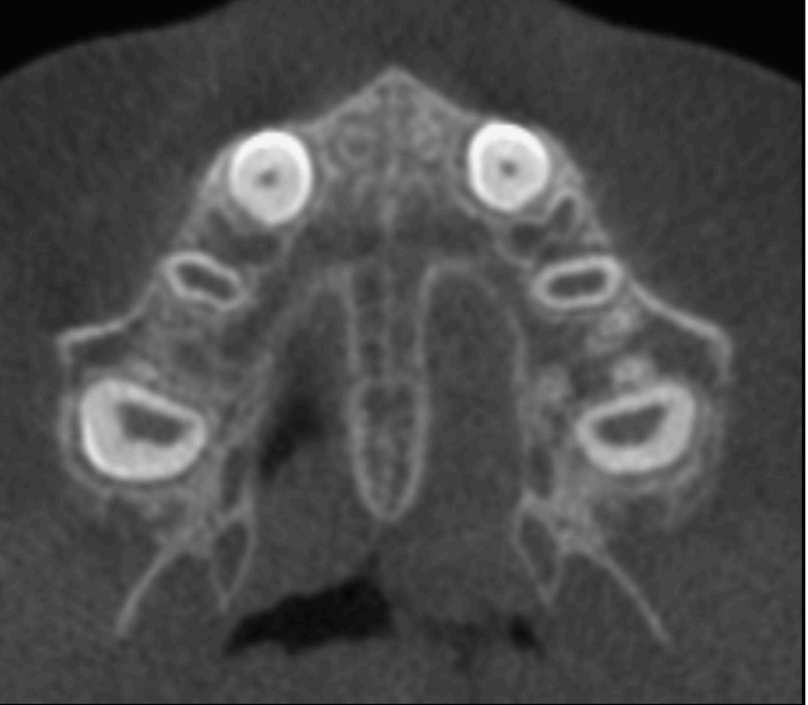
[+ Author information](#)

**STUDIED 10 PATIENTS AGE 18-38**

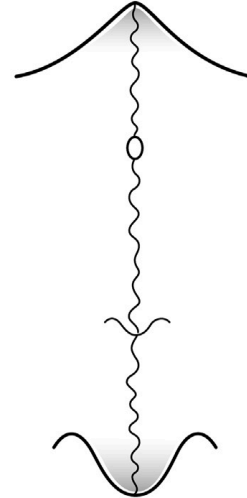
**NO SUTURE OBLITERATION FOUND AT HISTOLOGIC EXAMINATION...**



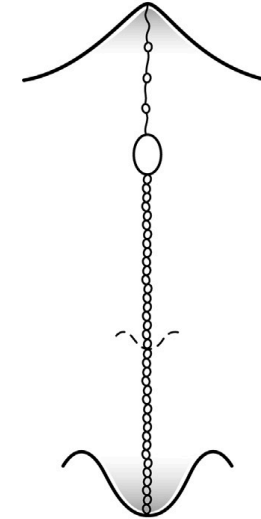




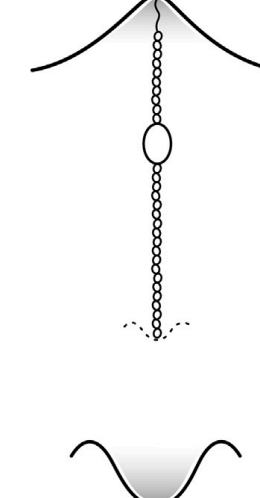
Stage A



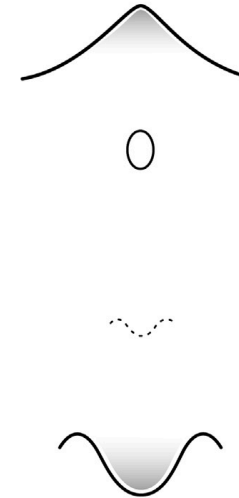
Stage B



Stage C

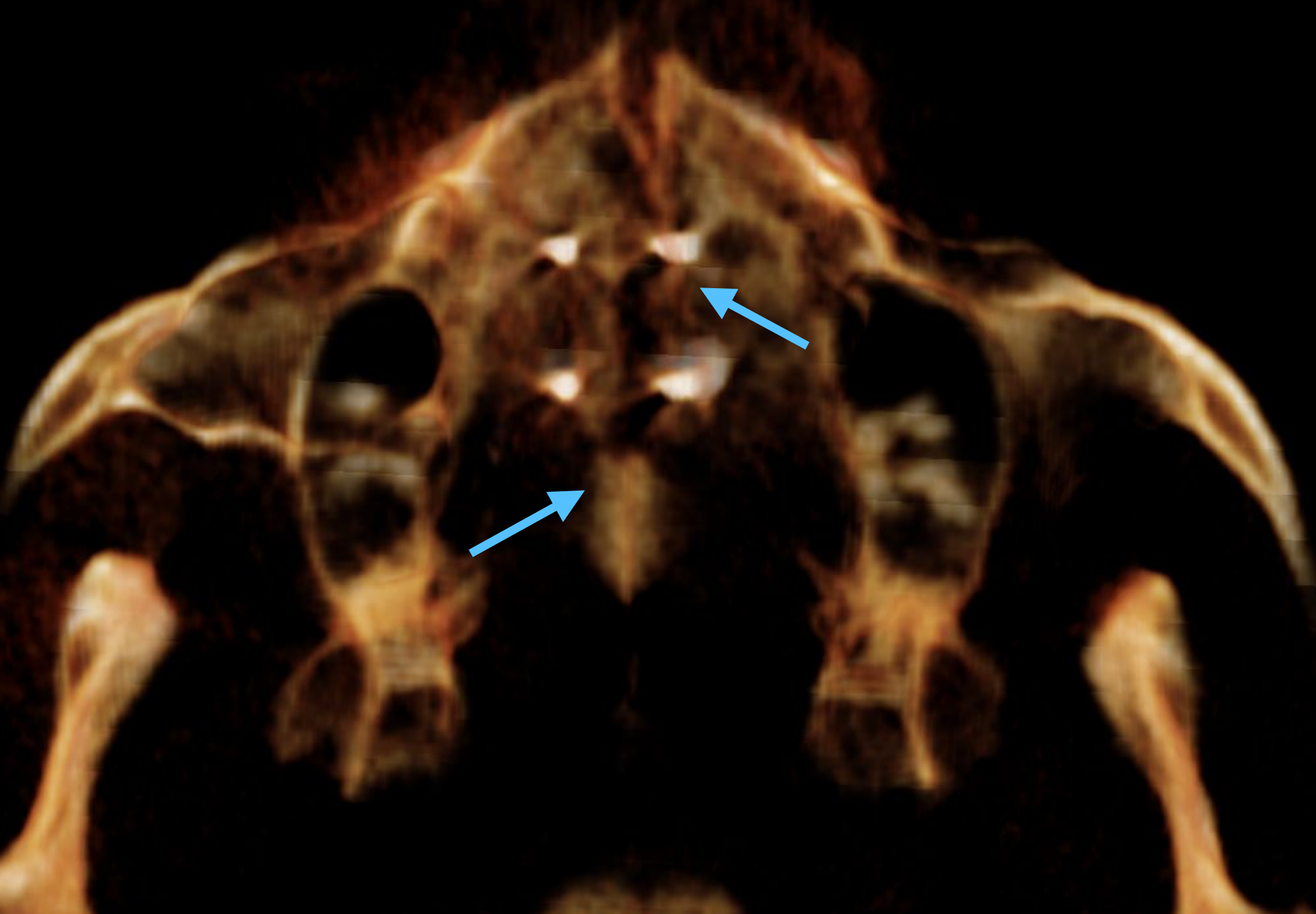


Stage D

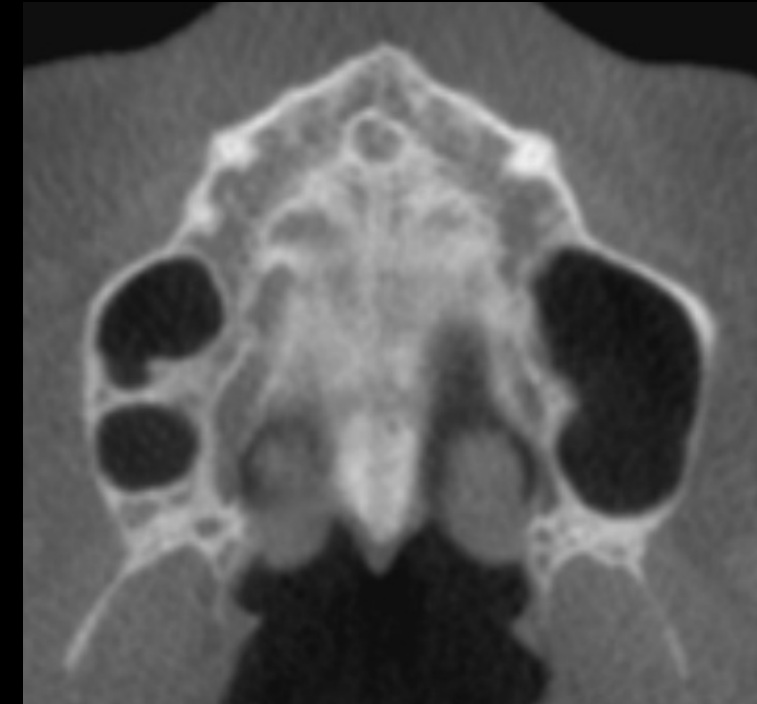


Stage E

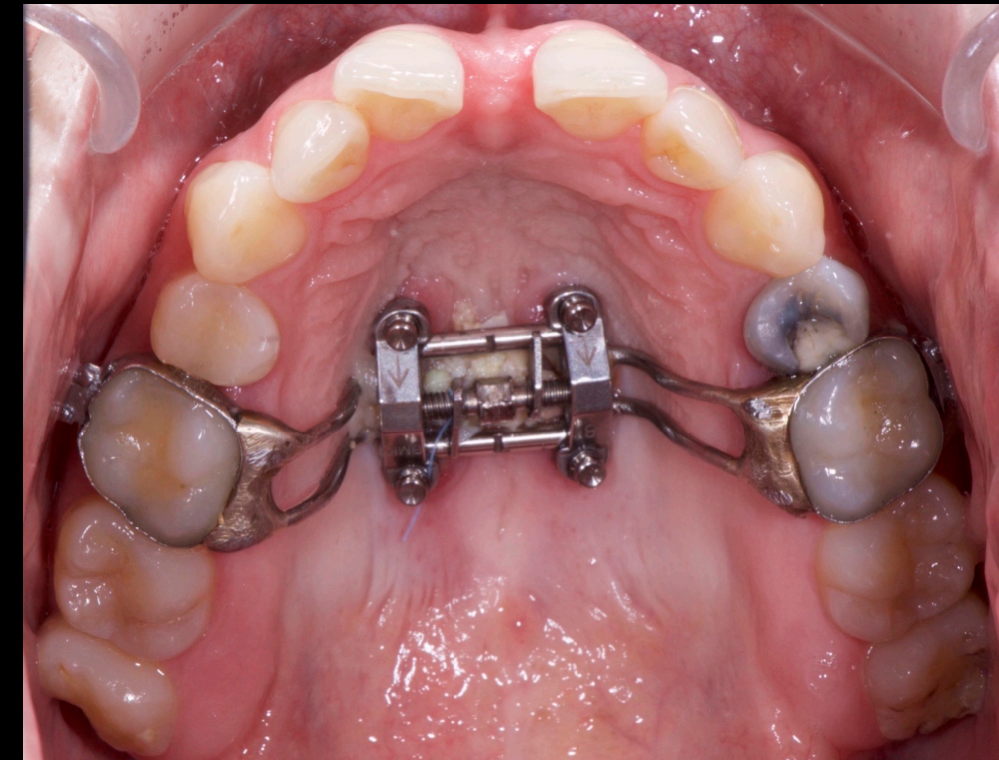




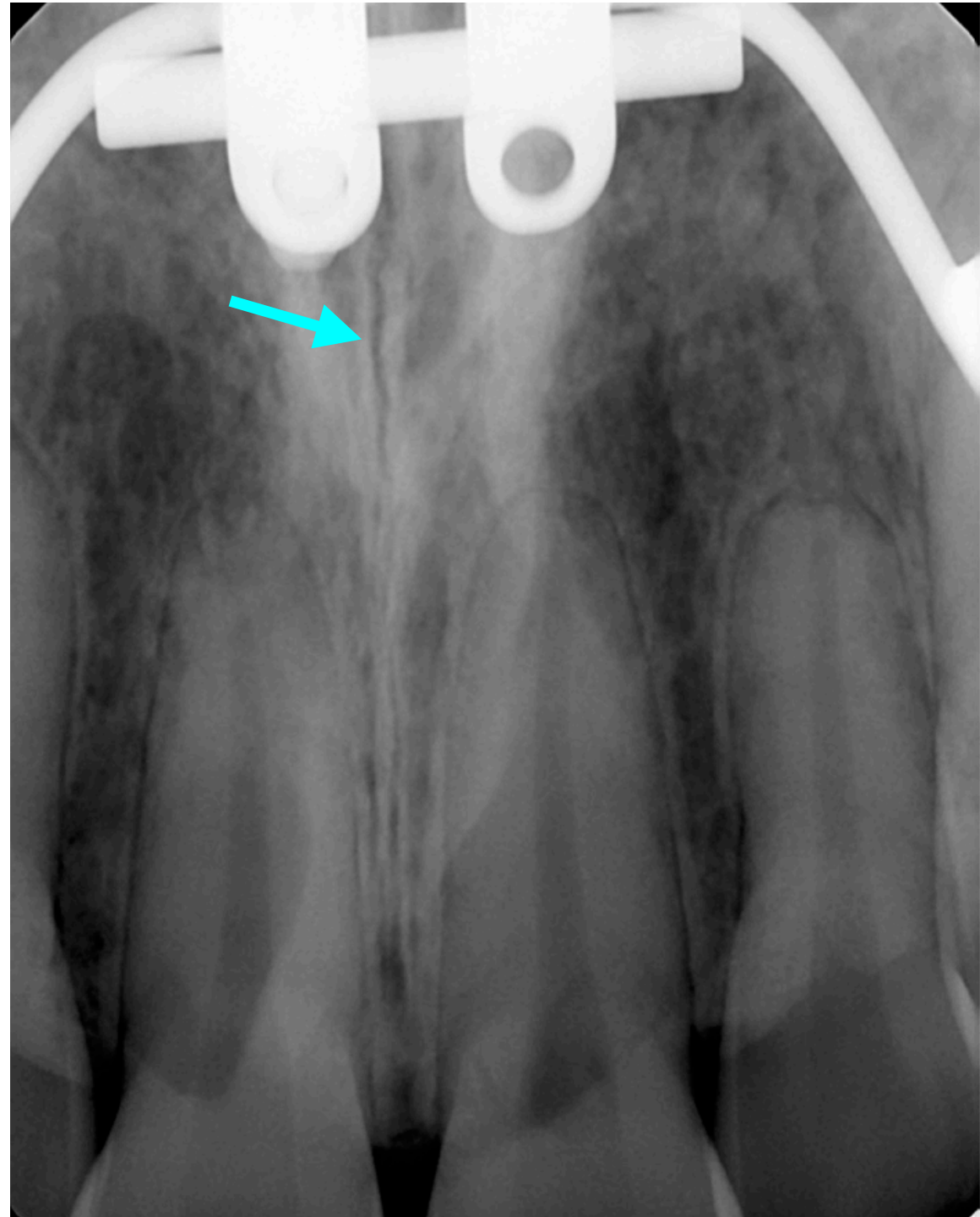
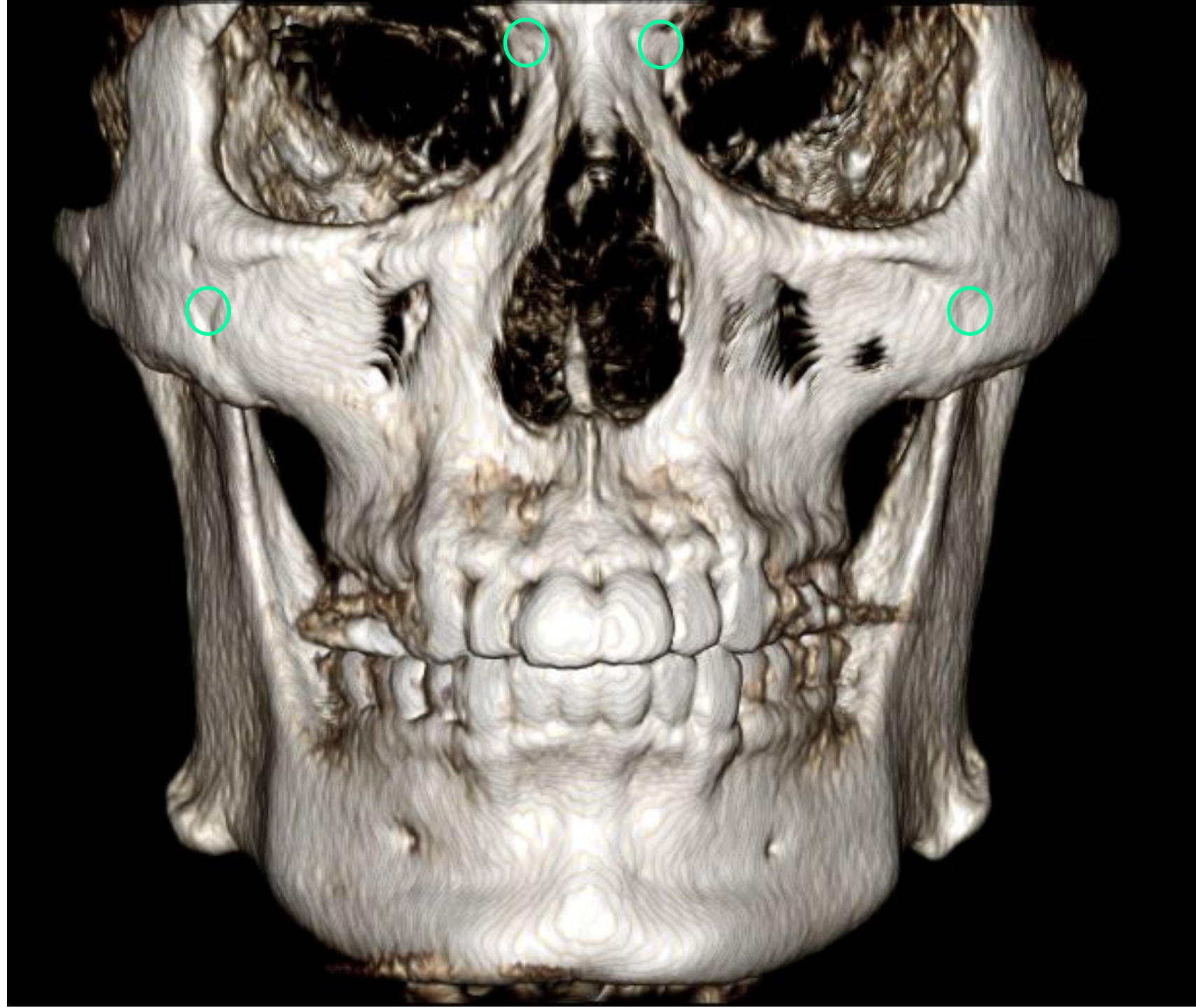
**STAGE D SUTURE**



**30 Y.O. FEMALE**

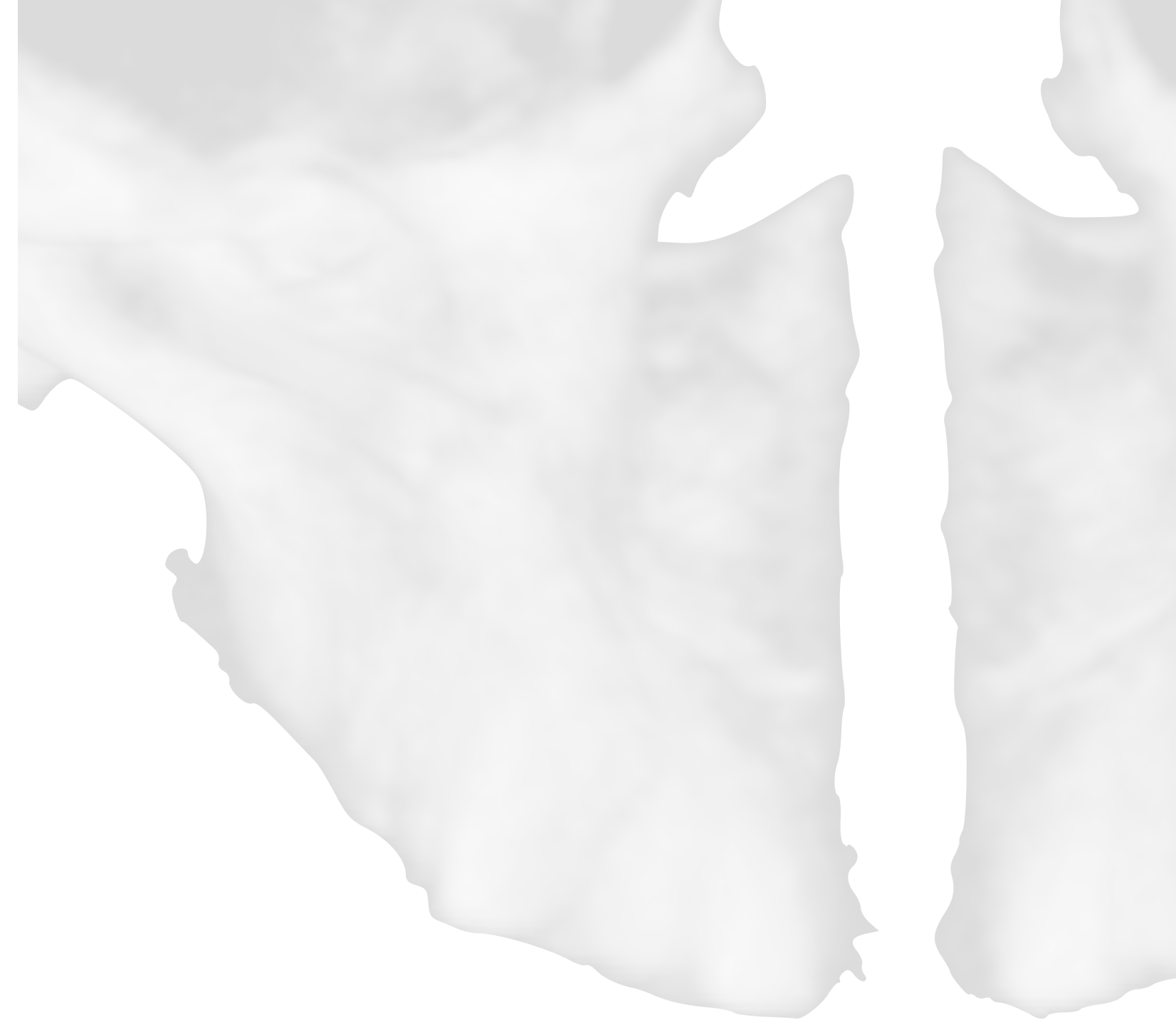








**RATIONALE FOR IMPLANT-ASSISTED EXPANSION....**







**13 Y.O. FEMALE**



**31 Y.O. FEMALE**





29 Y.O. MALE



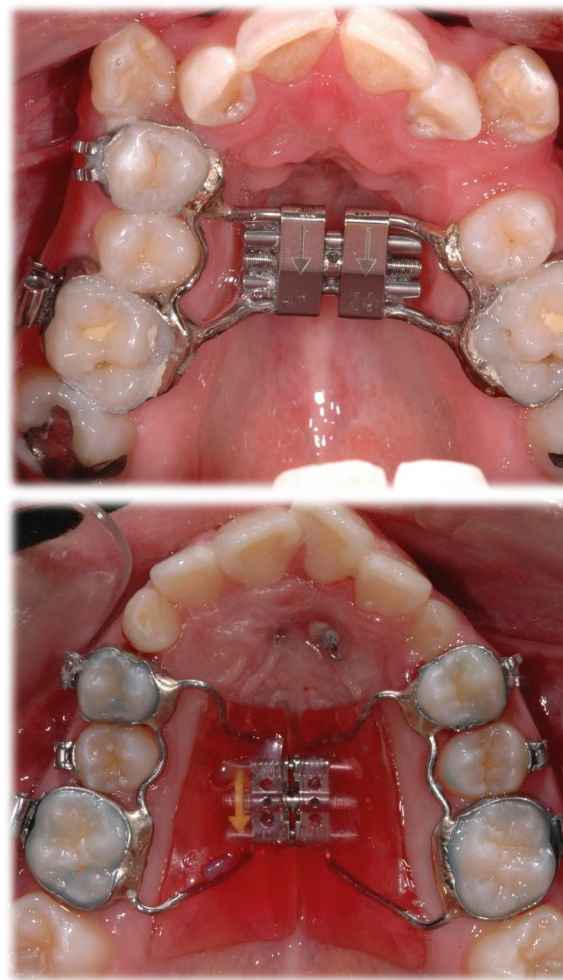


## ALVEOLAR BONE CHANGES AFTER RAPID MAXILLARY EXPANSION WITH TOOTH-BORN APPLIANCES: A SYSTEMATIC REVIEW



In all considered studies, significant loss of buccal bone thickness and marginal bone level were observed in anchored teeth, following RME.

Bone loss was on average less than 1mm



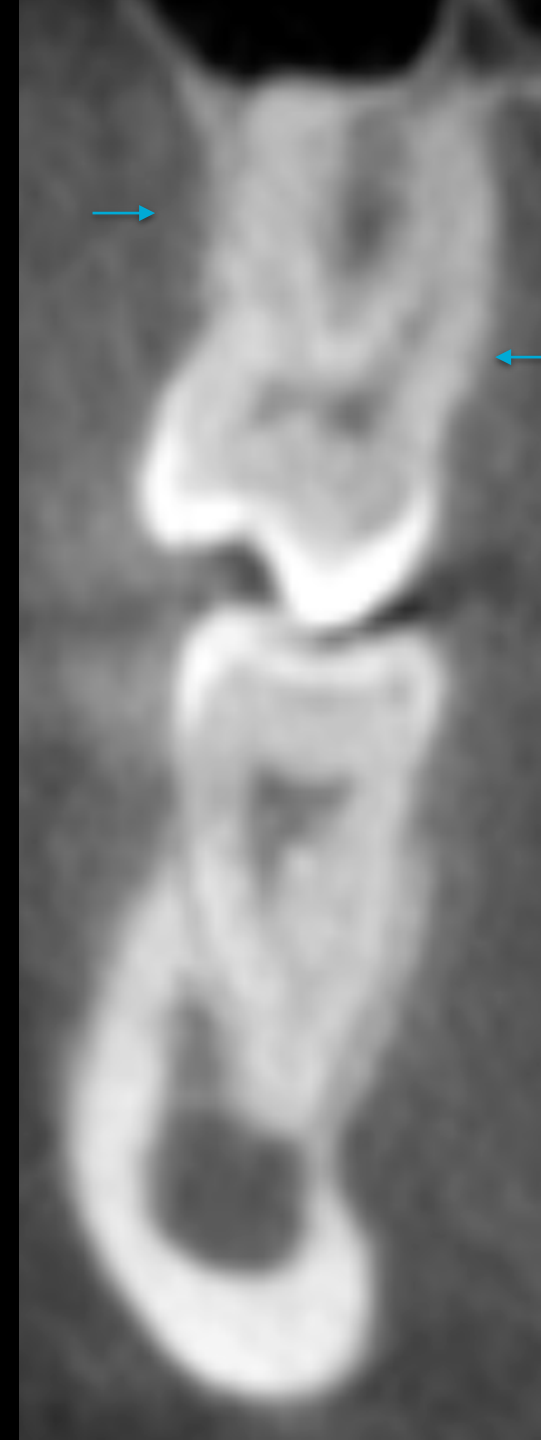
*LO GIUDICE A. ET AL. EUR J ORTHOD. 2018; 40(3):296-303*



TYPE A



TYPE B

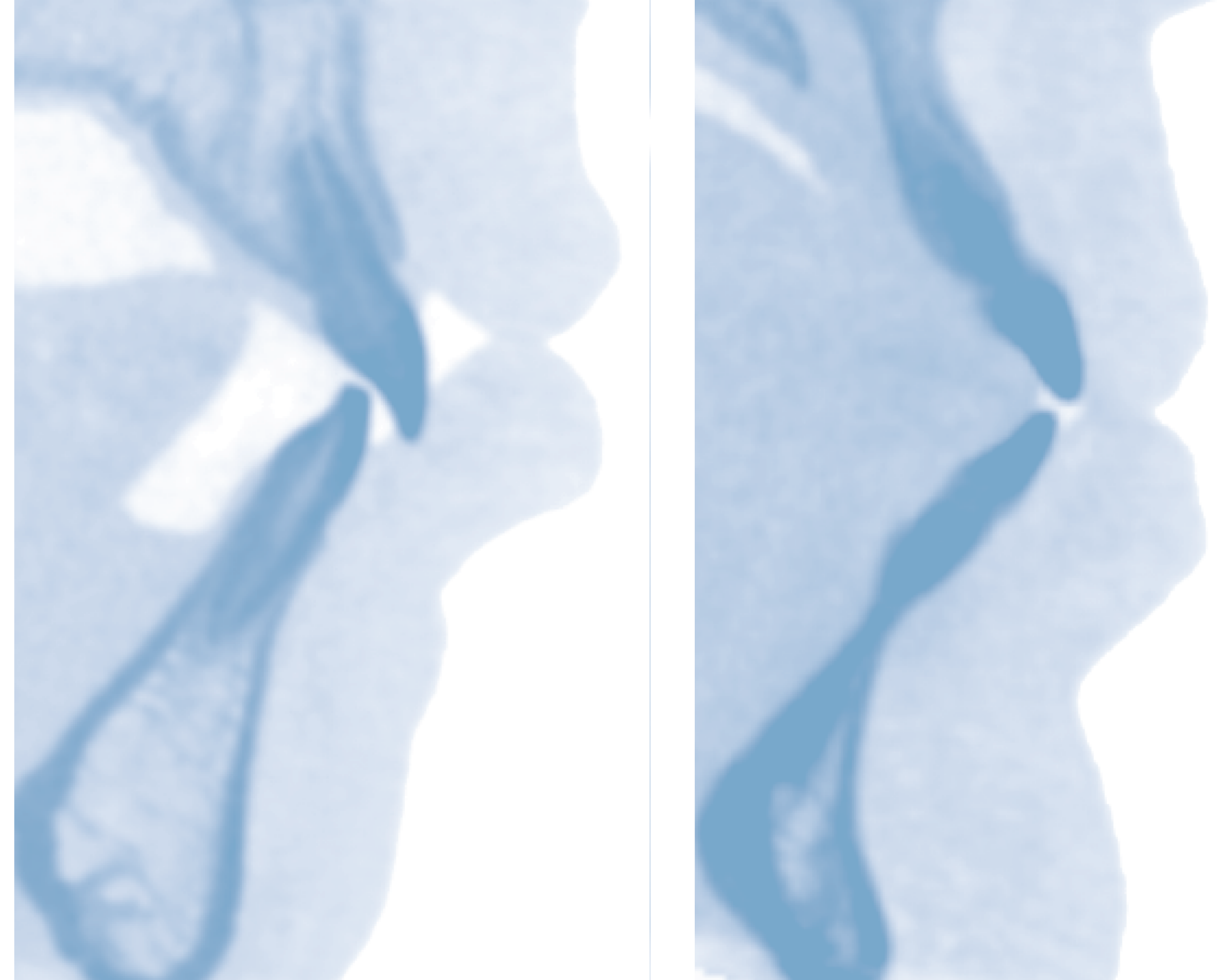




# 3D guided comprehensive approach to mucogingival problems in orthodontics

*Marianna Evans, Nipul K. Tanna, and Chun-Hsi Chung*

**Advances in technology have enabled the clinician to use a 3-dimensional (3D) guided approach to orthodontic diagnosis and treatment planning, leading to a more predictable treatment sequence and outcome for orthodontists and surgeons. Important factors must be taken into consideration when planning orthodontic treatment such as the existing and projected tooth position as well as the periodontal soft and hard tissue phenotype. 3D anatomic analysis of the dentoalveolar complex may provide more information than what can be derived from 2-dimensional radiographs and the clinical examination. It can help identify patients at risk for the development of mucogingival problems during or after orthodontic treatment and can guide the clinician in determining the appropriate intervention to minimize the risks of an unfavorable outcome. (Semin Orthod 2016; 22:52–63.) © 2016 Elsevier Inc. All rights reserved.**





# ALVEOLAR BONE CHANGES AFTER RAPID MAXILLARY EXPANSION WITH TOOTH-BORN APPLIANCES: A SYSTEMATIC REVIEW.

## Recommendations:

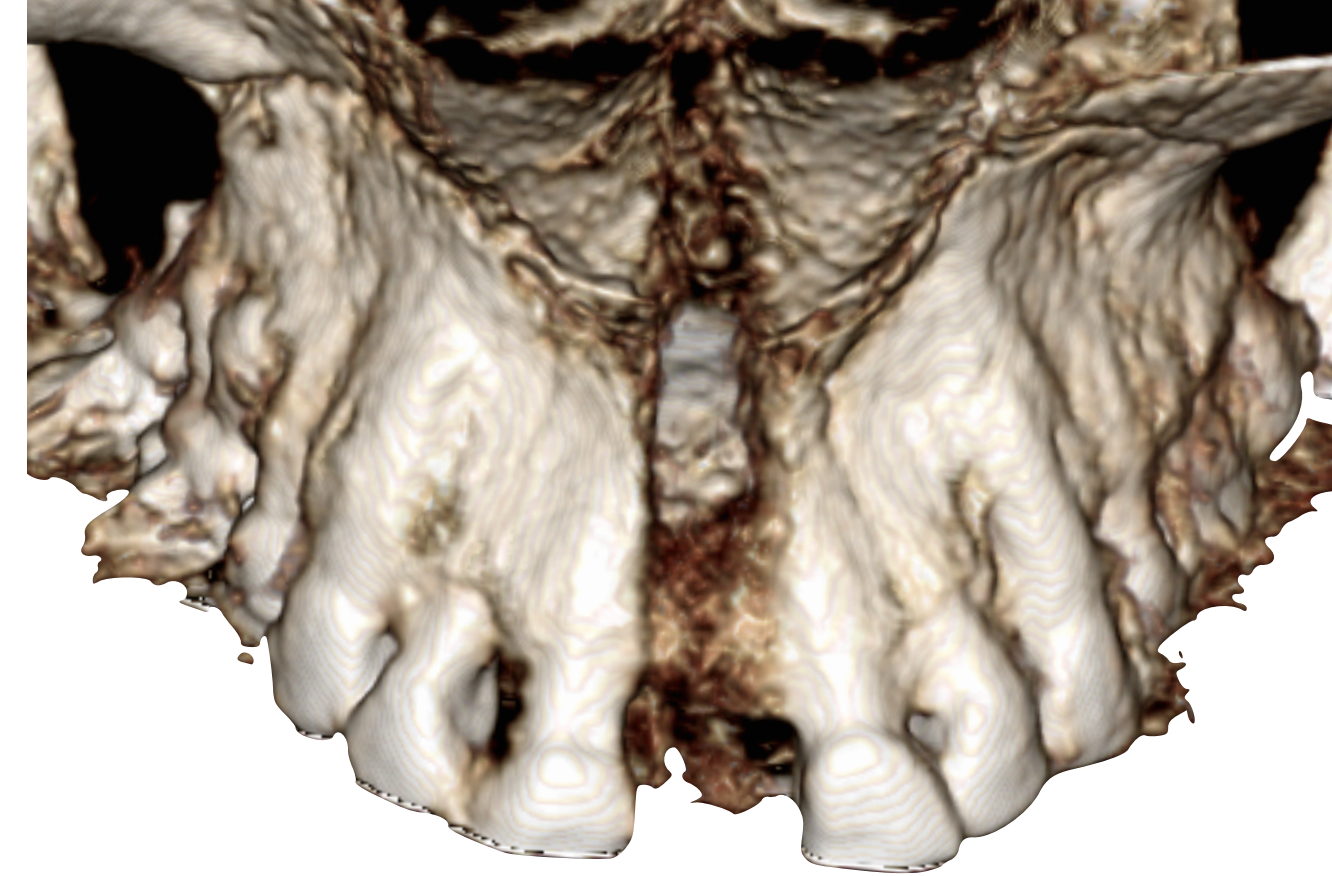
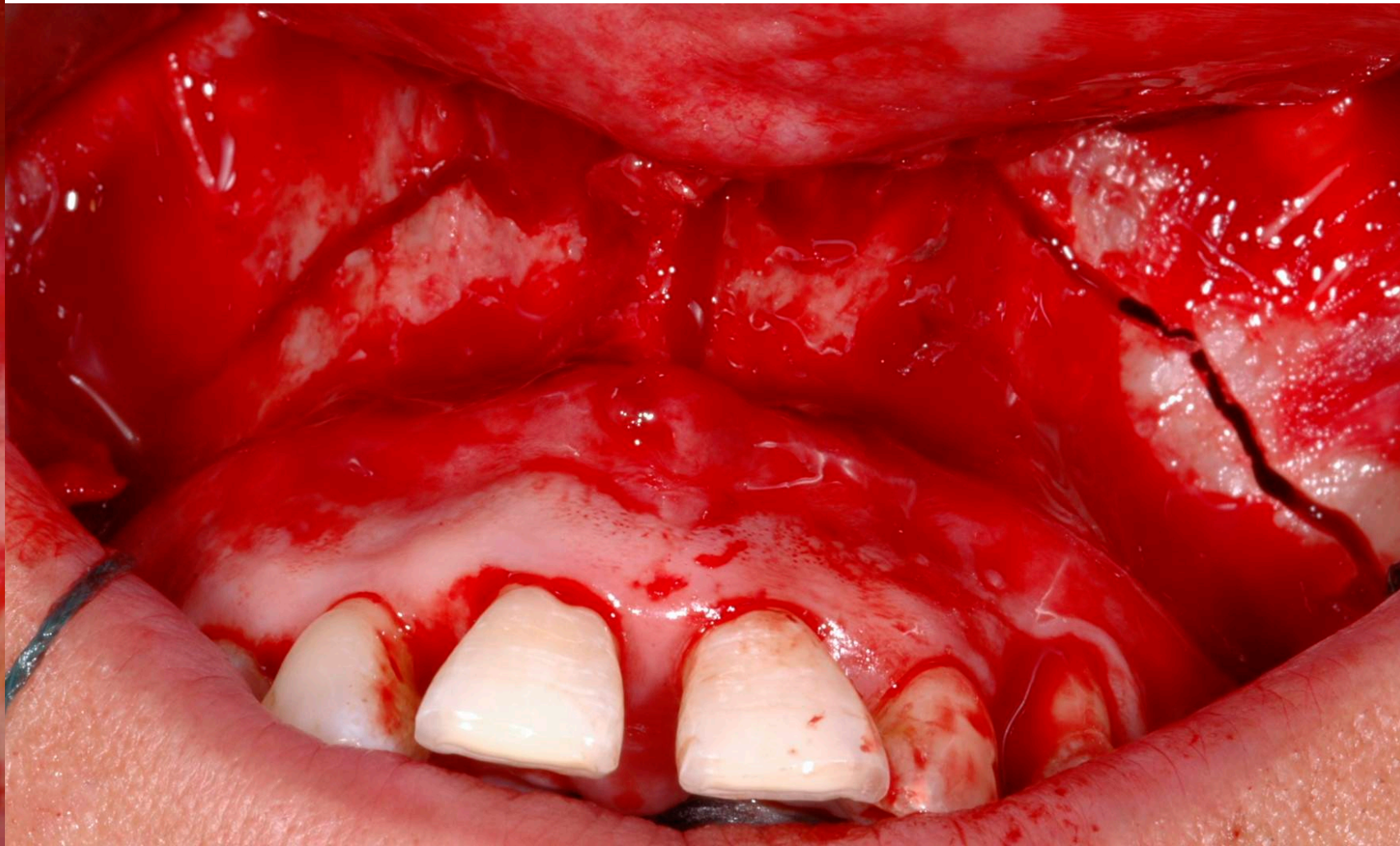
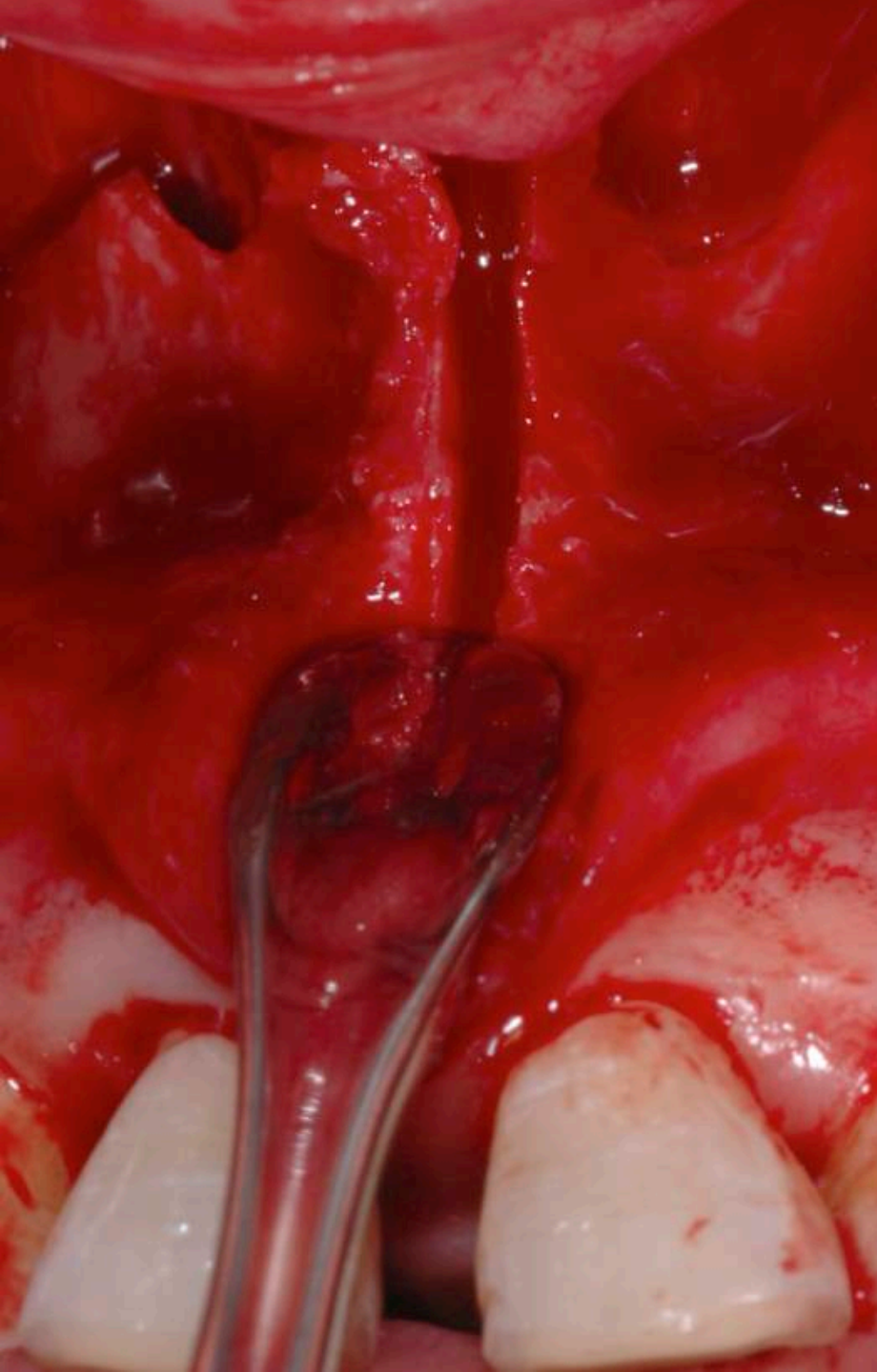
- Evaluate gingival biotype prior to expansion
- Use primary teeth as anchors
- Utilize TADs and SARPE in skeletally mature patients to minimize periodontal damage...

***LO GIUDICE A. ET AL. EUR J ORTHOD. 2018; 40(3):296-303***





## TRADITIONAL TREATMENT: SARPE



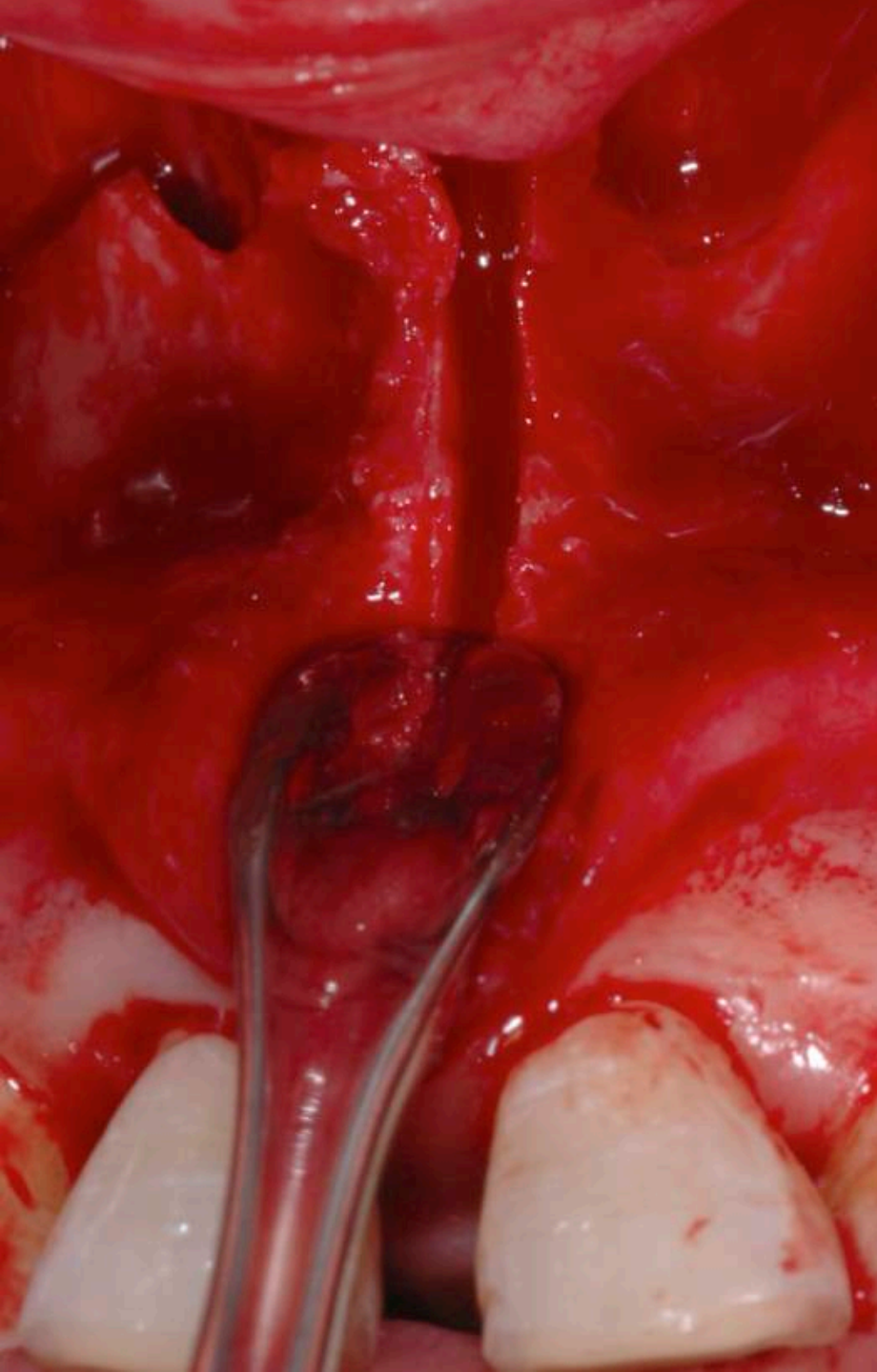


## Periodontal effects of surgically assisted rapid palatal expansion evaluated clinically and with cone-beam computerized tomography: 6-month preliminary results

Chantal Gauthier,<sup>a</sup> René Voyer,<sup>b</sup> Manon Paquette,<sup>c</sup> Pierre Rompré,<sup>d</sup> and Athena Papadakis<sup>e</sup>  
*Montreal, Quebec, Canada*

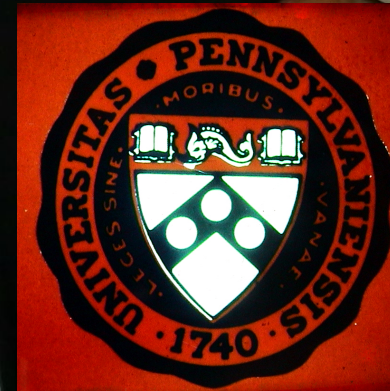
Although clinical findings were insignificant, radiographic changes in crestal bone thickness were statistically significant.

**AJODO 2011;139:S117-28**

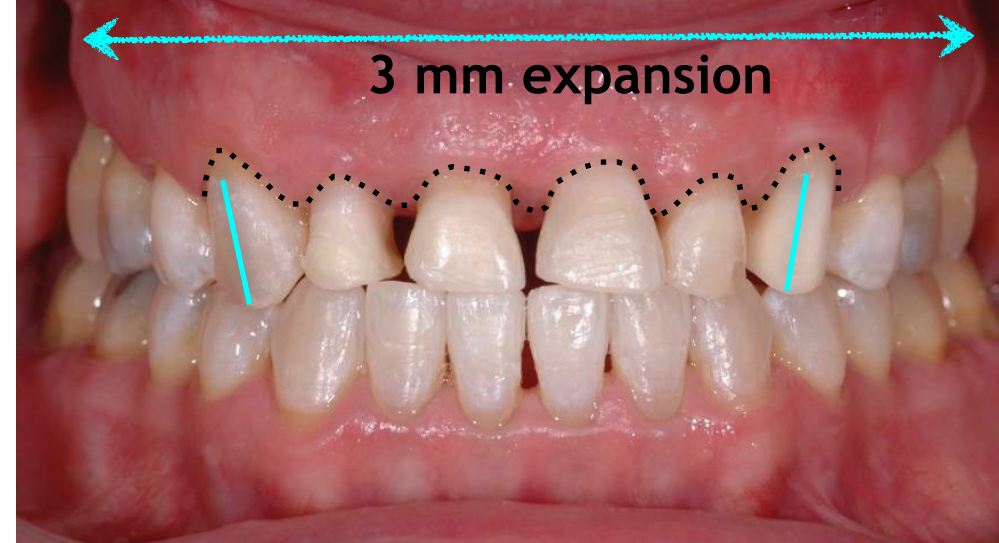




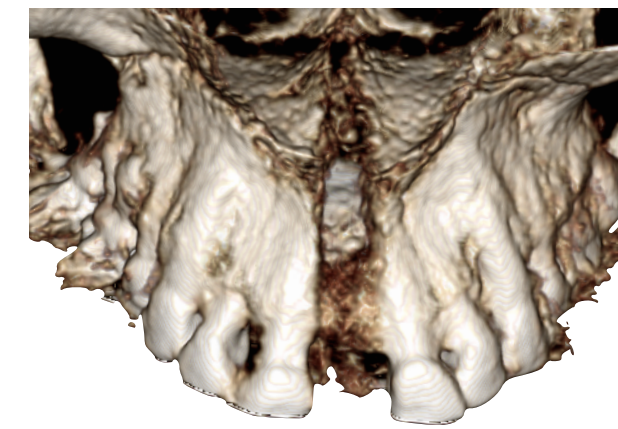
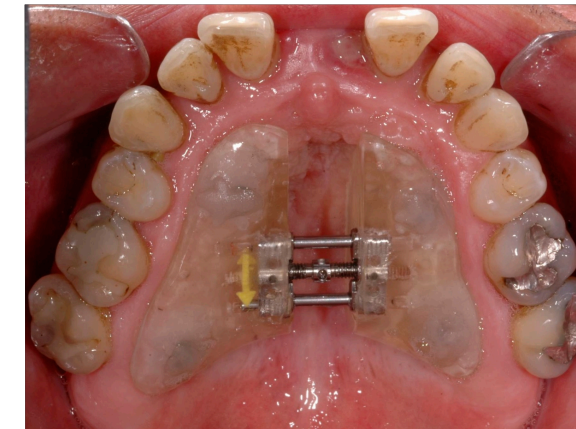
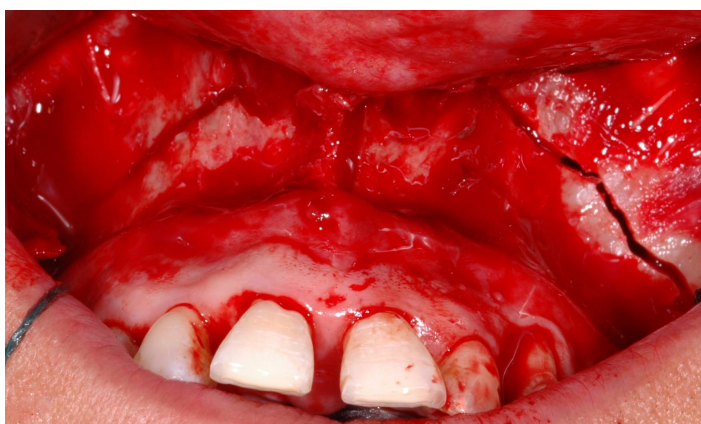
STANDING ON THE SHOULDERS OF GIANTS...







## PERIODONTAL REGENERATION **WITHOUT** PERIODONTAL SURGERY







## SARPE

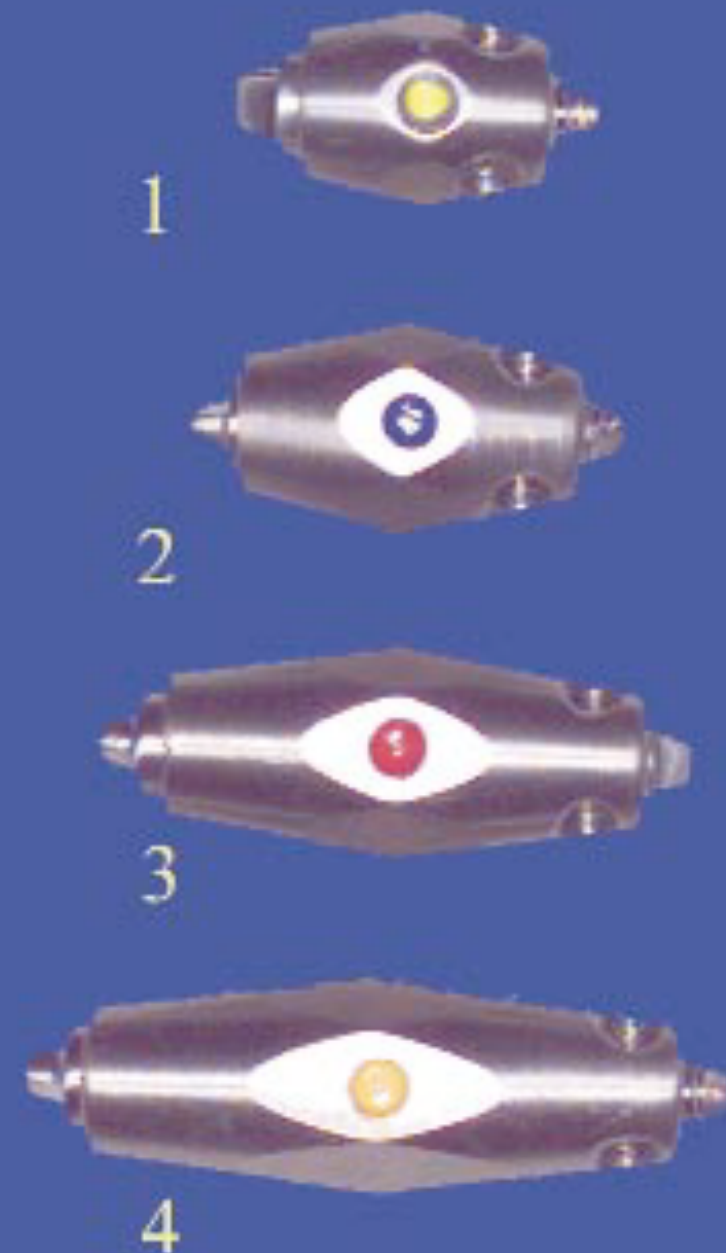
CHALLENGING TO PLACE THIS DEVICE IN VERY NARROW PALATE

REPORTED MANY COMPLICATIONS:

SOFT TISSUE IMPINGEMENT

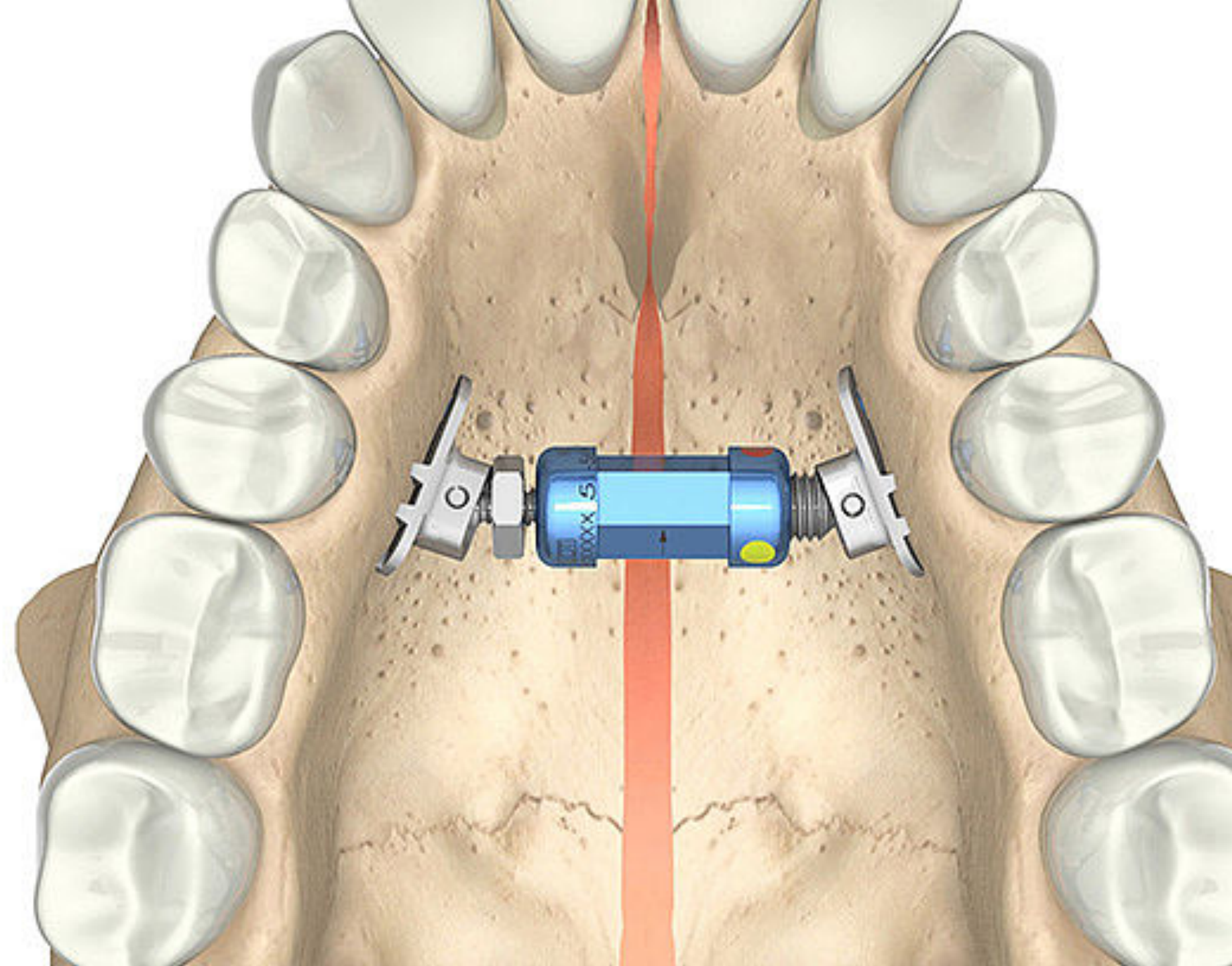
APPLIANCE LOOSENING

*Mommaerts M. et al; British J OMFS, 1999 (37): 268-272*

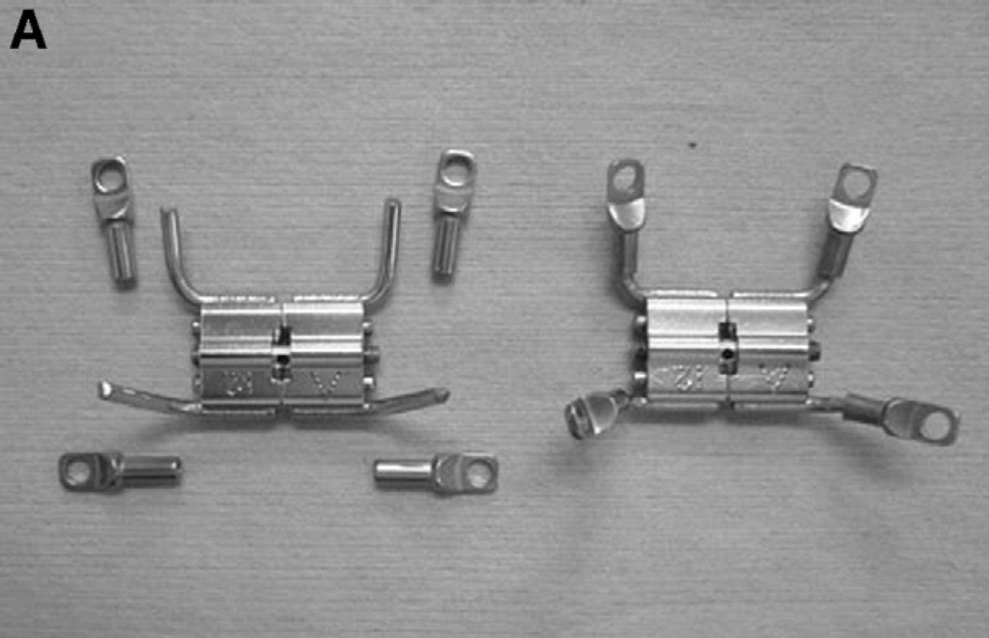




**KLS** martin

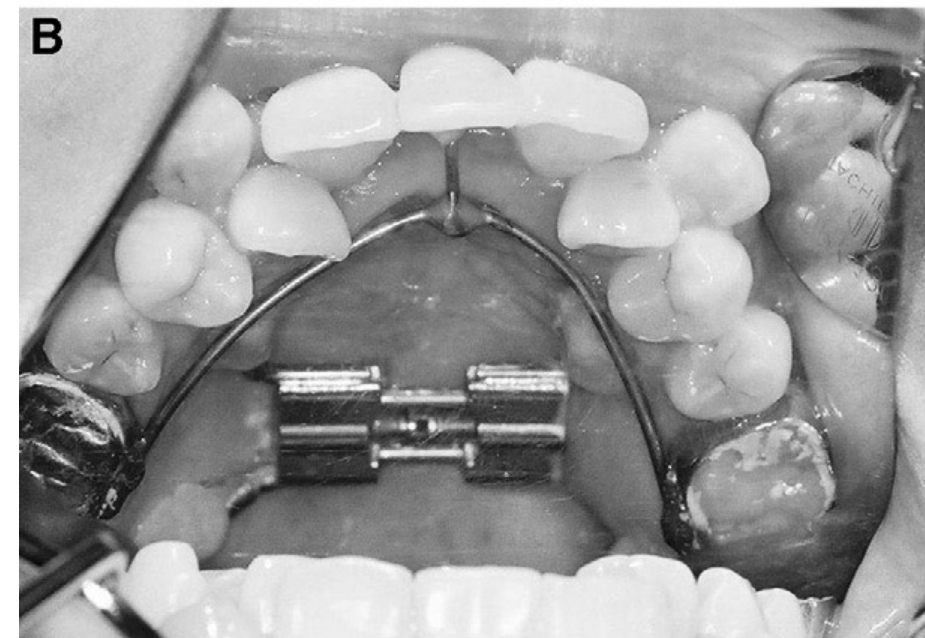




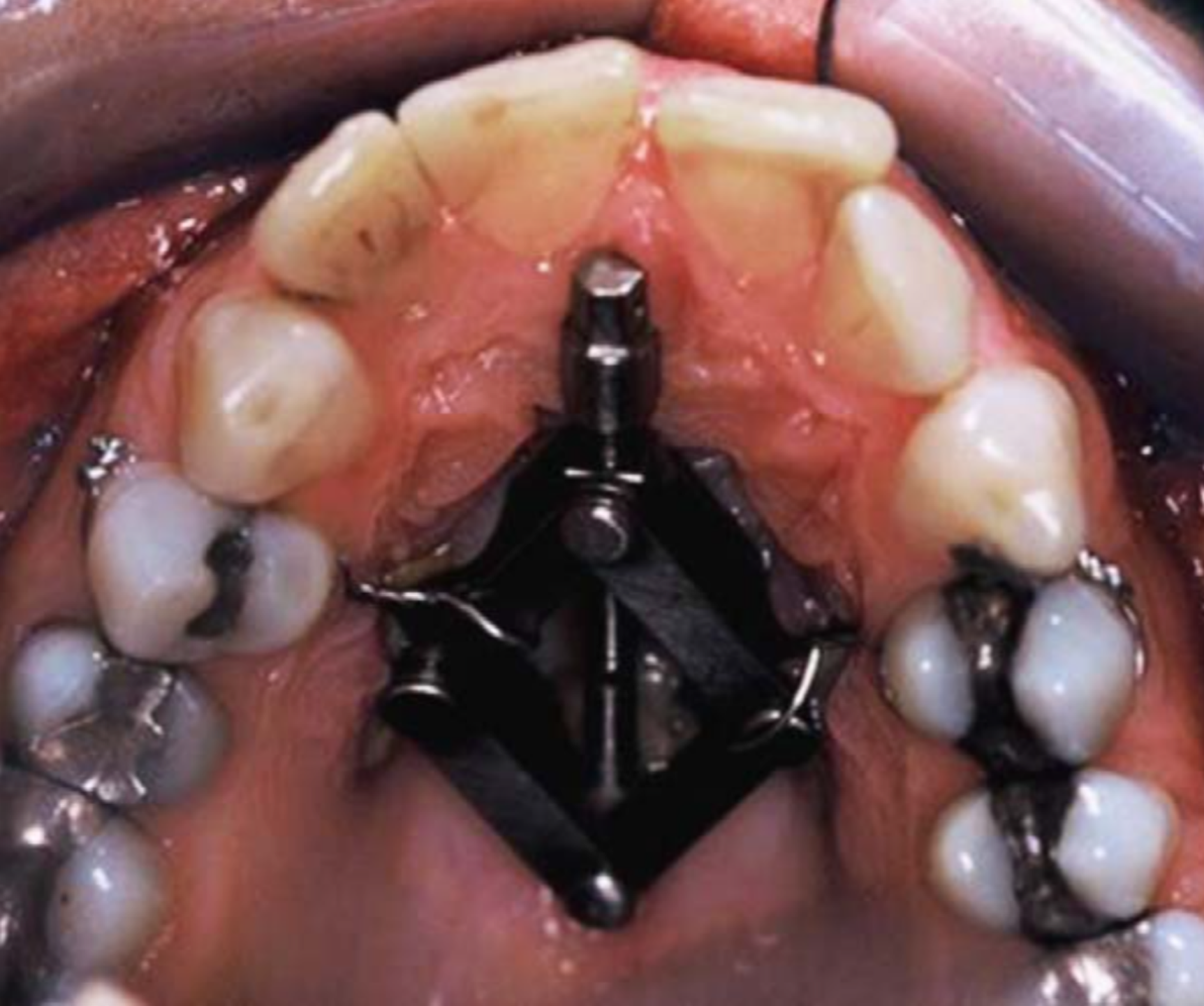


Dynaform  
System

SARPE

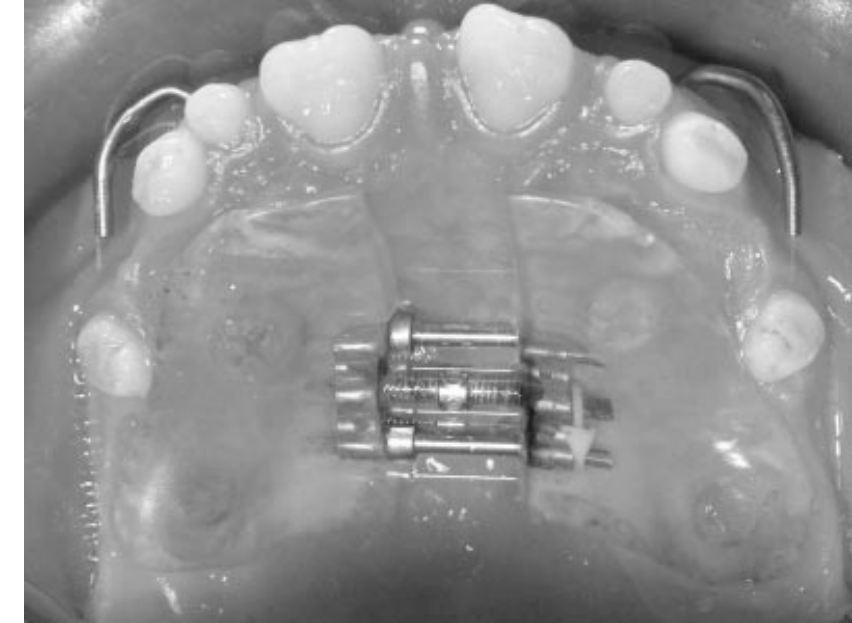
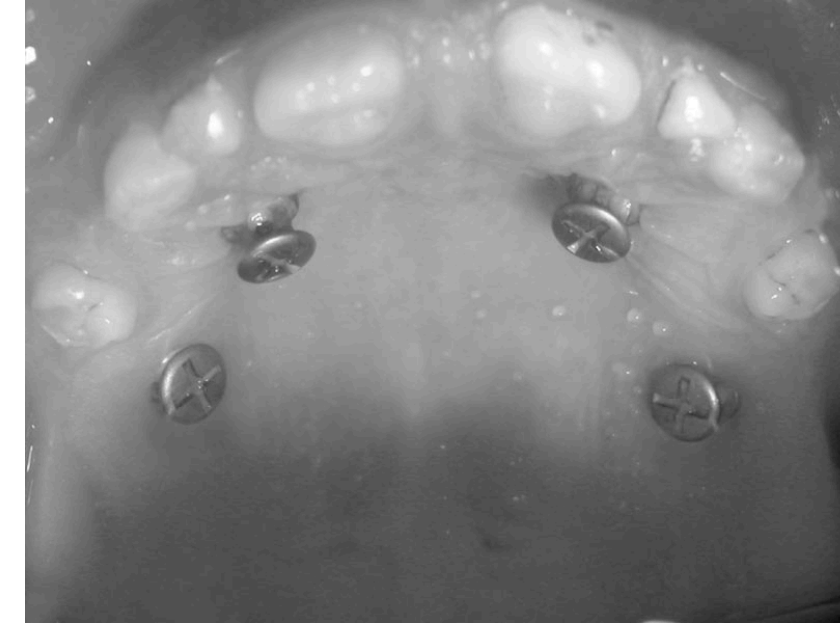








# ORTHOPEDIC PROTRACTION WITH SKELETAL ANCHORAGE IN A PATIENT WITH MAXILLARY HYPOPLASIA AND HYPODONTIA



**Kircelli et al; Angle Orthod 2006;76: 156-163**









**PTERYGOMAXILLARY DISJUNCTION IS  
NOT NECESSARY IN PATIENTS UNDER  
20 Y.O. DURING SARPE PROCEDURE**

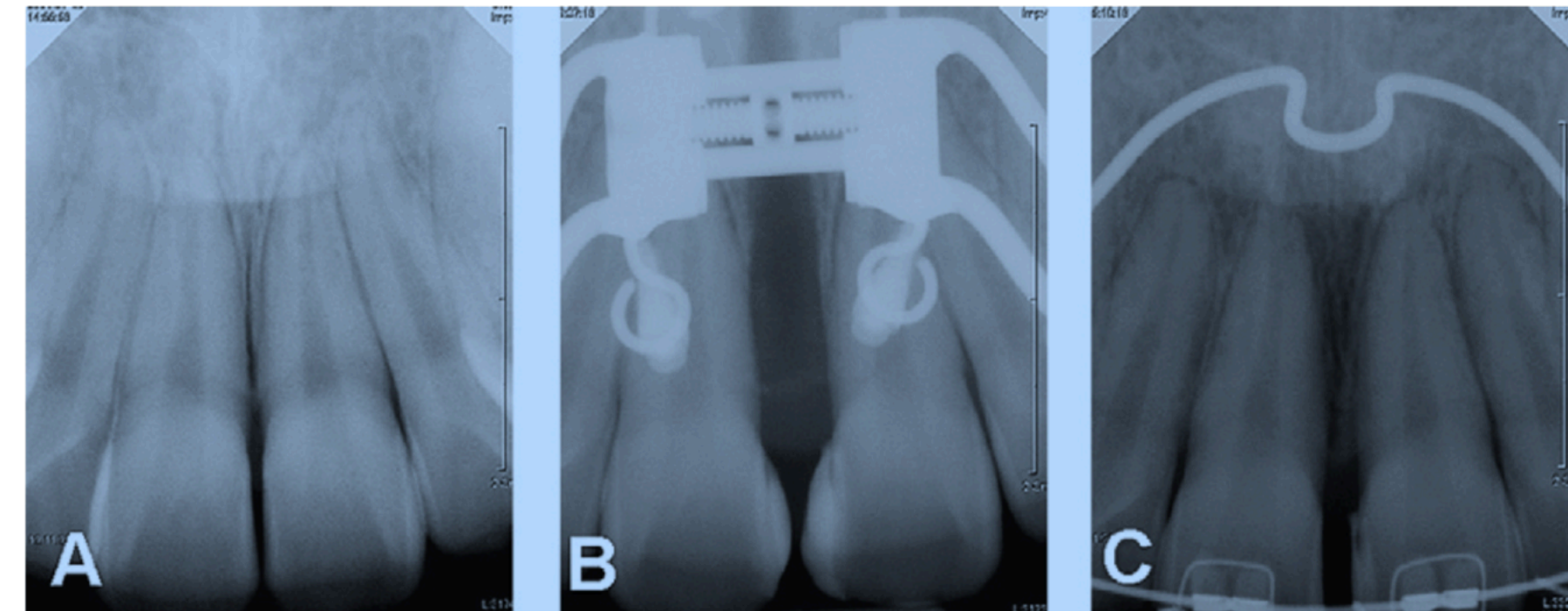
*Laudemann K. et al; OMFS 2009;13:159-169*



# Miniscrew-assisted nonsurgical palatal expansion before orthognathic surgery for a patient with severe mandibular prognathism

Kee-Joon Lee,<sup>a</sup> Young-Chel Park,<sup>b</sup> Joo-Young Park,<sup>c</sup> and Woo-Sang Hwang<sup>c</sup>  
*Seoul, Korea*

**AJODO 2010;137:830-9**





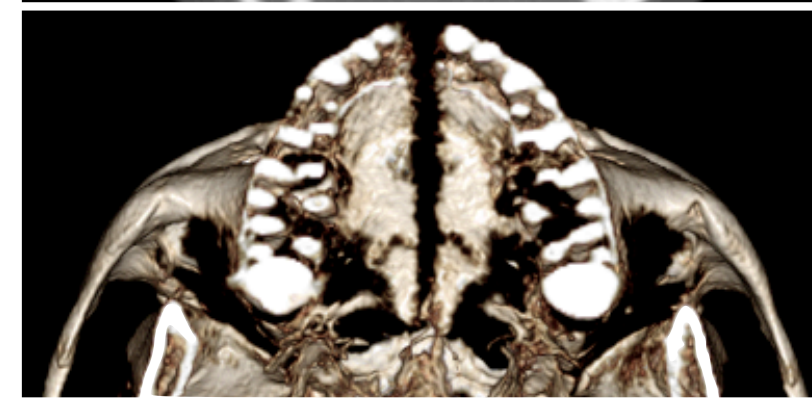
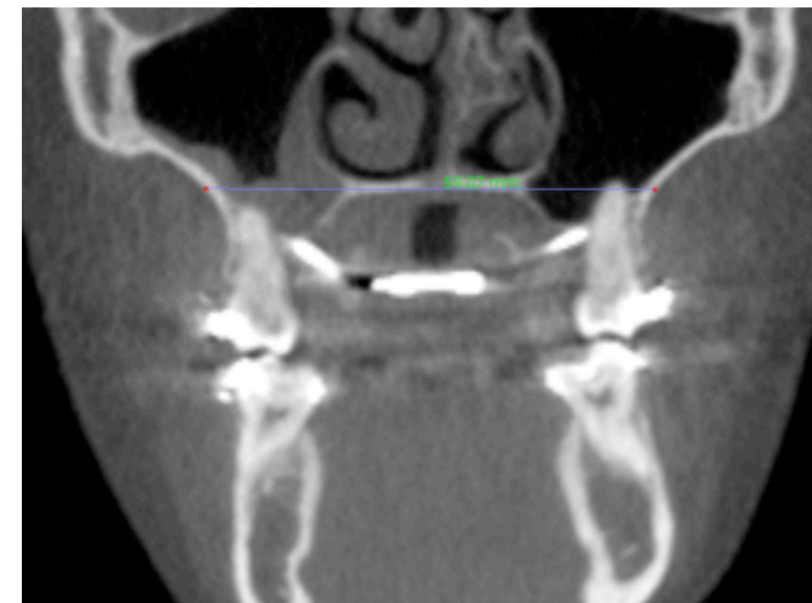
EXPAND **WITHOUT SURGERY** UP TO EARLY 20S...

22 YR. OLD FEMALE

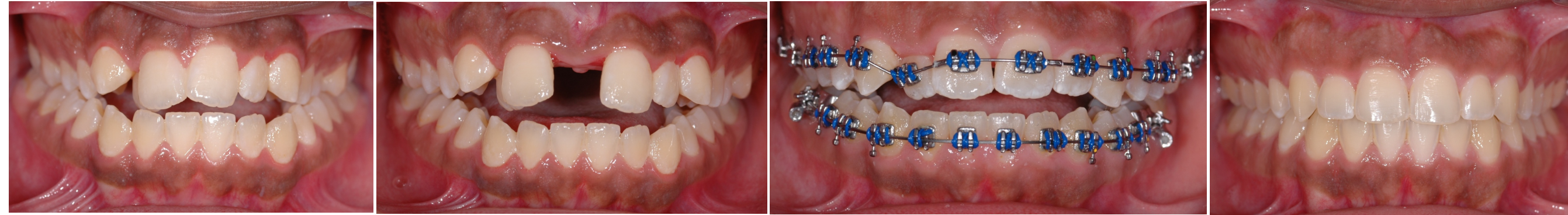
**THREE-DIMENSIONAL CONTROL  
WITH TAD-TISSUE SUPPORTED  
RAPID PALATAL EXPANDER:  
AN OVERVIEW OF CLINICAL APPLICATIONS  
AND BIOLOGICAL ADVANTAGES**

MARIANNA EVANS, DMD

RMO CLINICAL REVIEWS, 2012







**THREE-DIMENSIONAL CONTROL  
WITH TAD-TISSUE SUPPORTED  
RAPID PALATAL EXPANDER:  
AN OVERVIEW OF CLINICAL APPLICATIONS  
AND BIOLOGICAL ADVANTAGES**

MARIANNA EVANS, DMD

RMO CLINICAL REVIEWS, 2012

ONLY 12 MONTHS IN ACTIVE TREATMENT

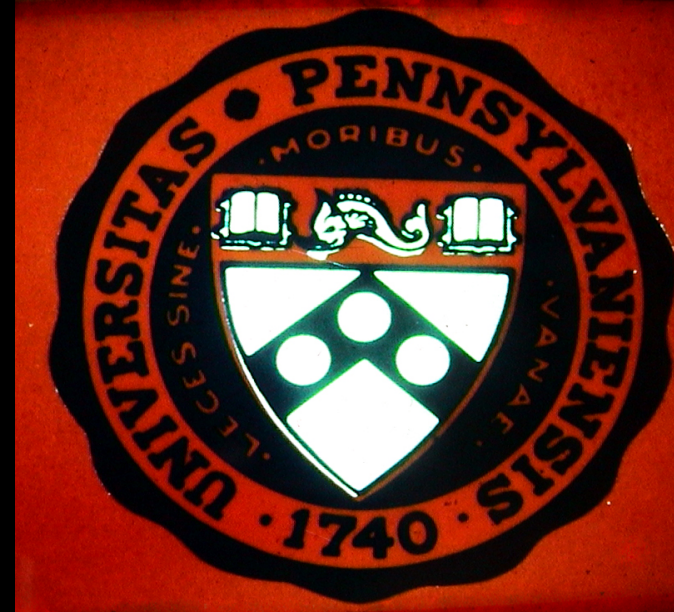






# RAPID MAXILLARY EXPANSION WITH SKELETAL ANCHORAGE VS BONDED TOOTH / TISSUE BORN EXPANDERS: A CASE REPORT COMPARISON UTILIZING CBCT

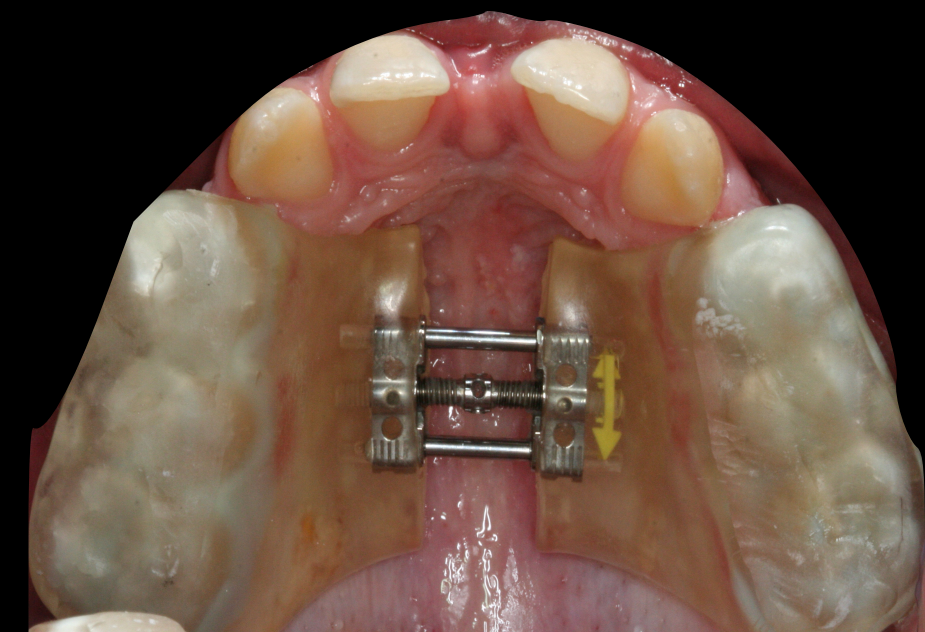
ROBERT L. VANARSDALL, JR. DDS, IGNACIO BLASI JR., DDS  
MARIANNA EVANS, DMD, PAUL KOCIAN, DDS



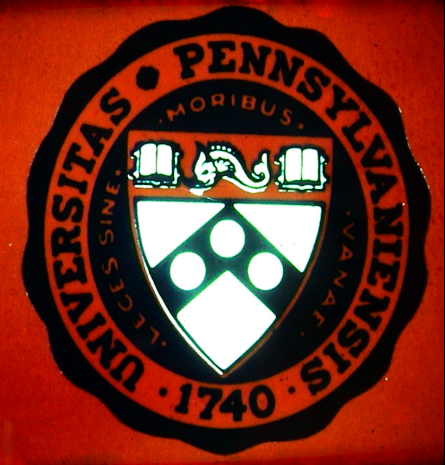
A. To prevent periodontal problems

B. To achieve greater dental and skeletal stability

C. To improve dentofacial esthetics by eliminating or improving lateral negative space







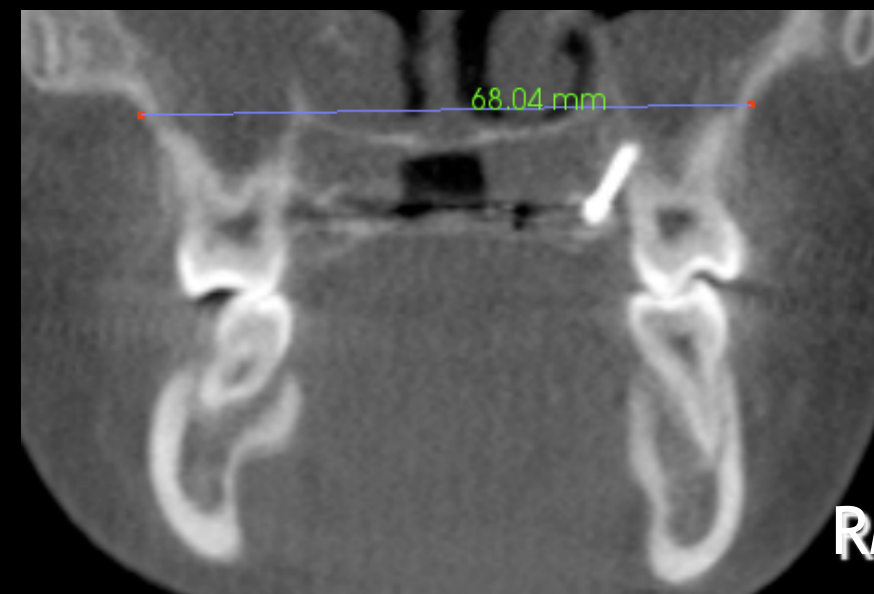
# COMPARISON OF MAXILLARY ORTHOPEDIC EXPANSION IN 13 Y.O. IDENTICAL TWINS: SKELETAL ANCHORED RPE VS BONDED RPE



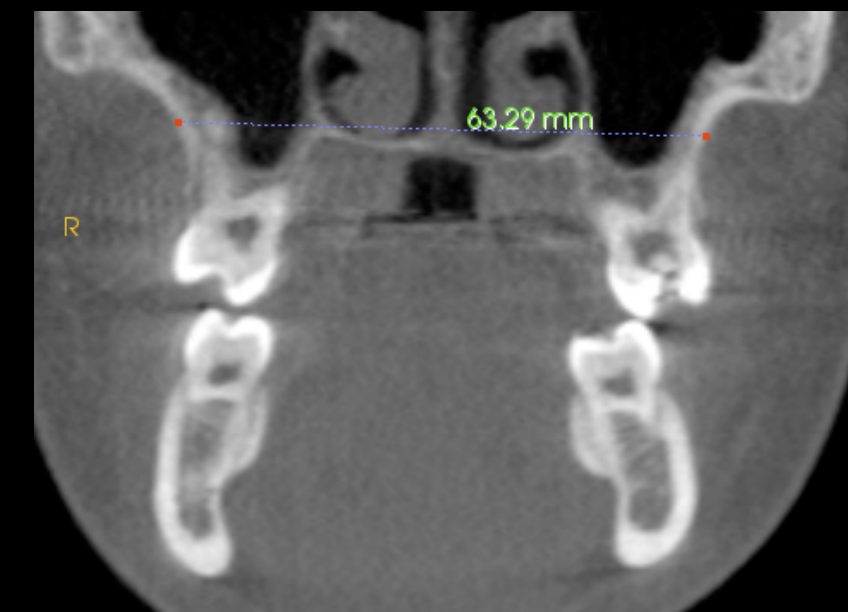
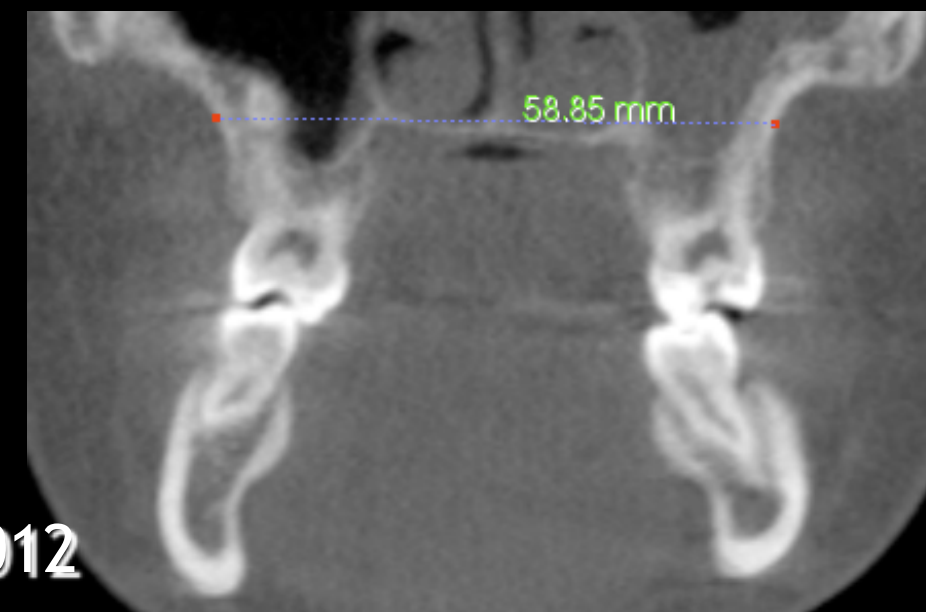
6.6 MM OF SKELETAL EXPANSION  
NO DENTAL TIPPING



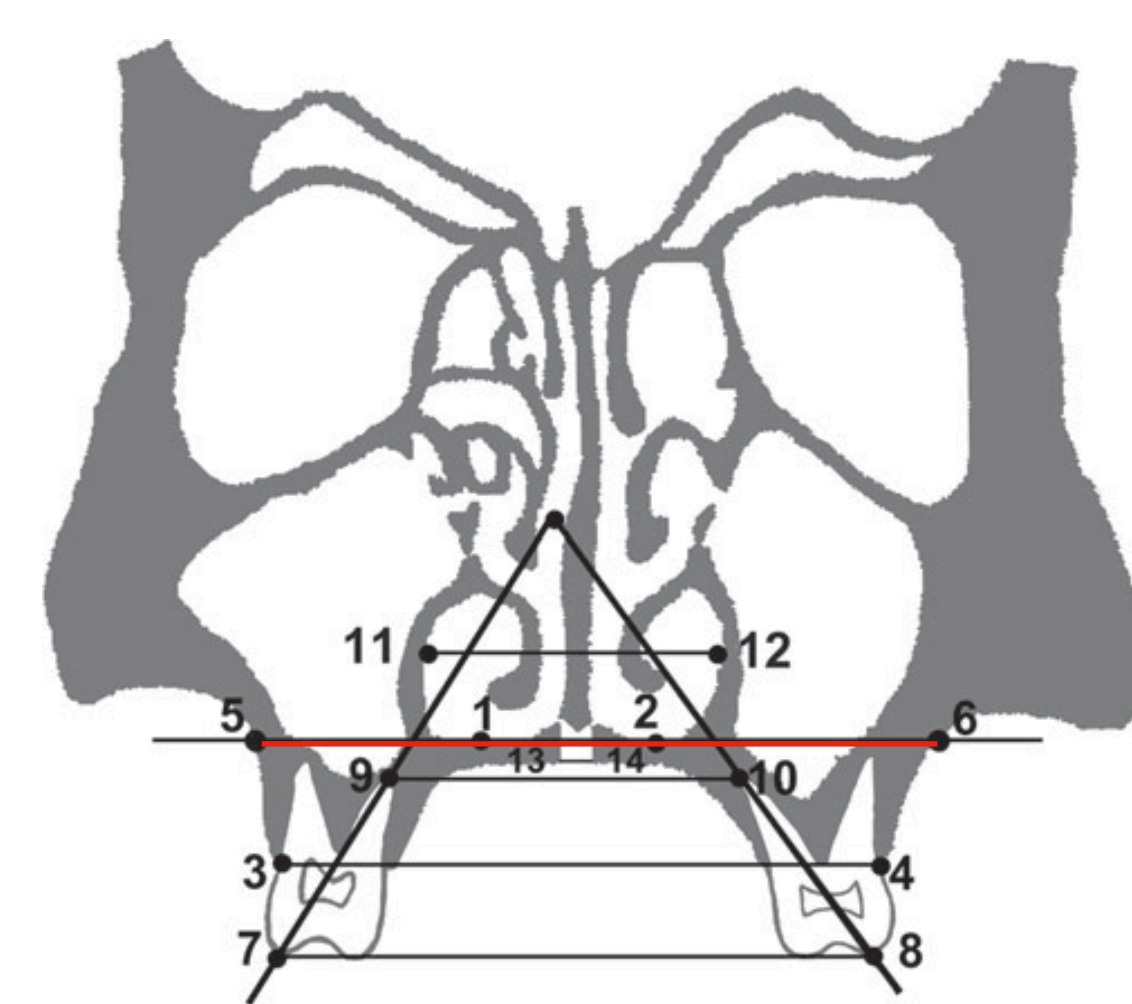
4 MM OF SKELETAL EXPANSION  
DENTAL TIPPING



RMO CLINICAL REVIEWS, 2012







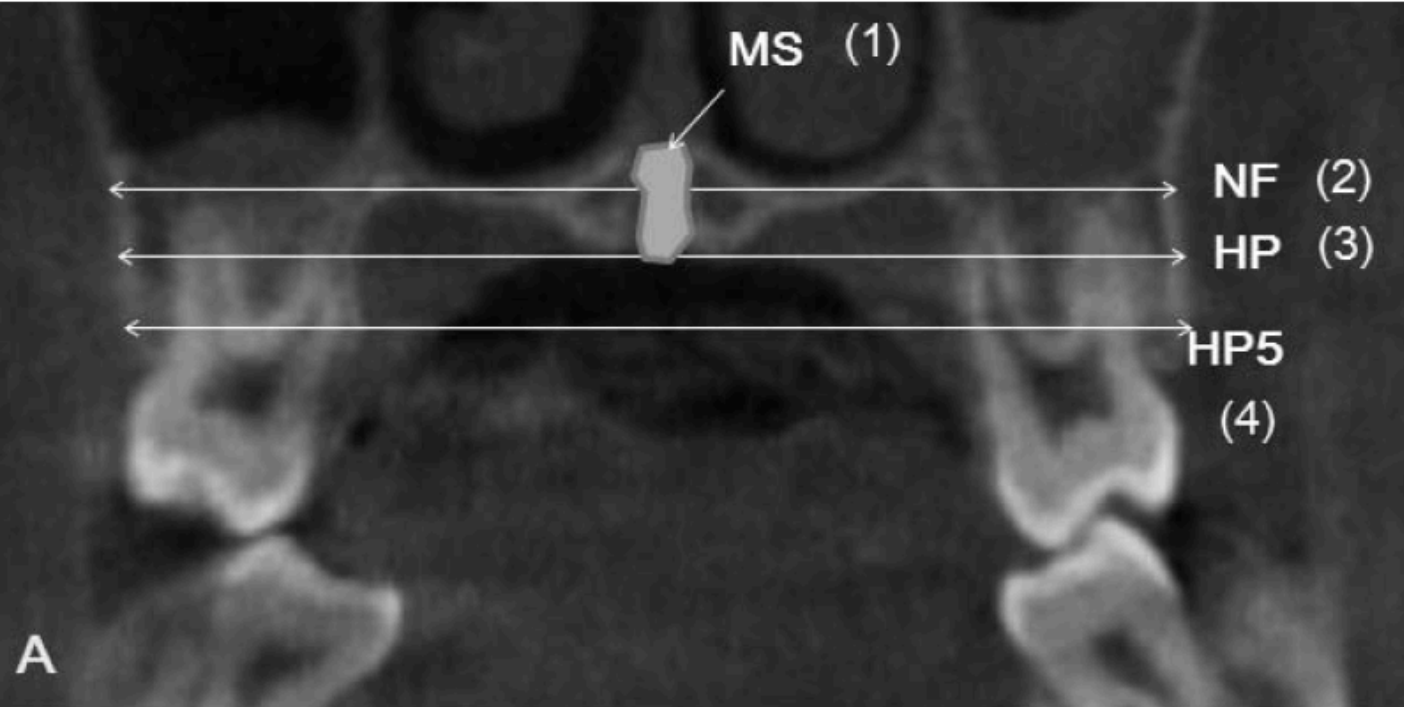
**70% OF EXPANSION OCCURRED AT THE ALVEOLAR LEVEL**

**ONLY 36% OF EXPANSION WAS SUTURAL**

**34% OF EXPANSION WAS PURE ALVEOLAR BANDING**

**EXPANSION VECTOR CENTERED ON THE FRONTAL NASAL SUTURE**

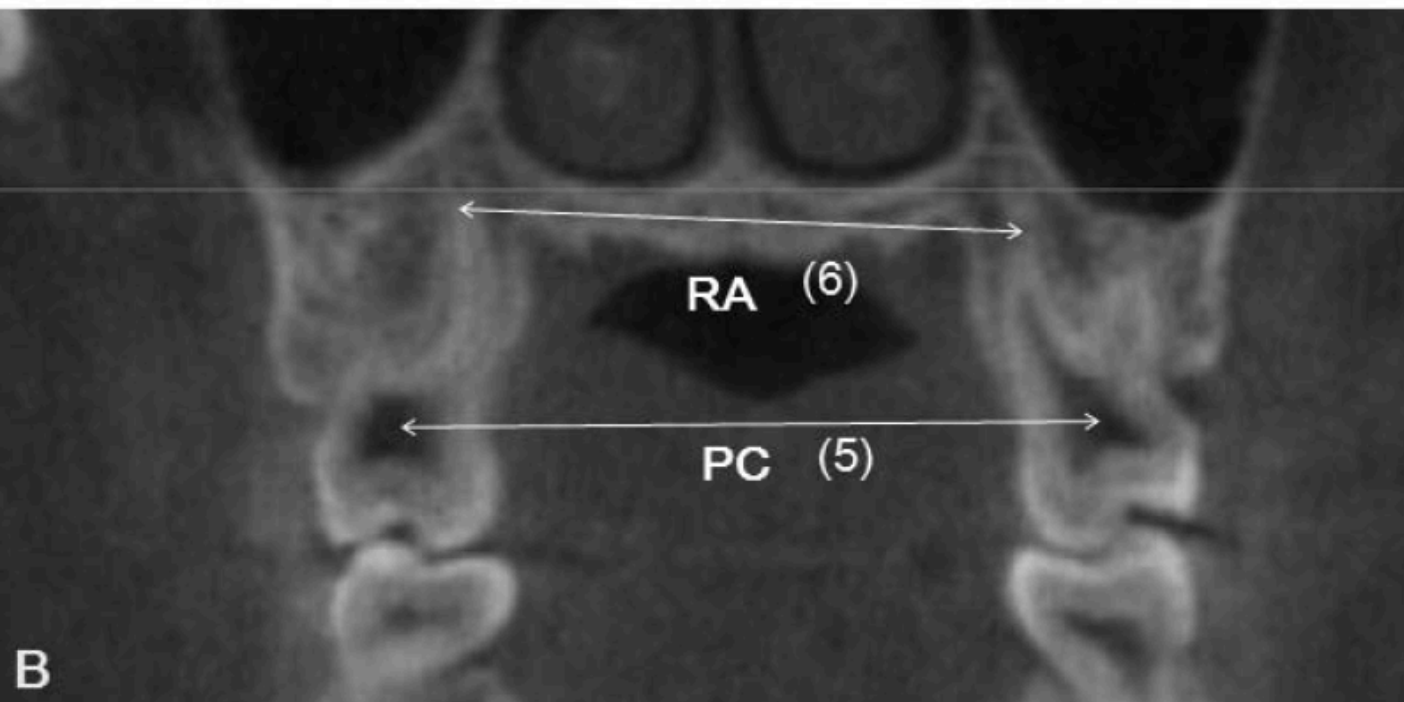




## DIFFERENTIATED ALVEOLAR BANDING FROM DENTAL TIPPING

**IN HYRAX GROUP ALVEOLAR BANDING WAS  $>2$  THAT OF TAD-EXPANSION GROUP**

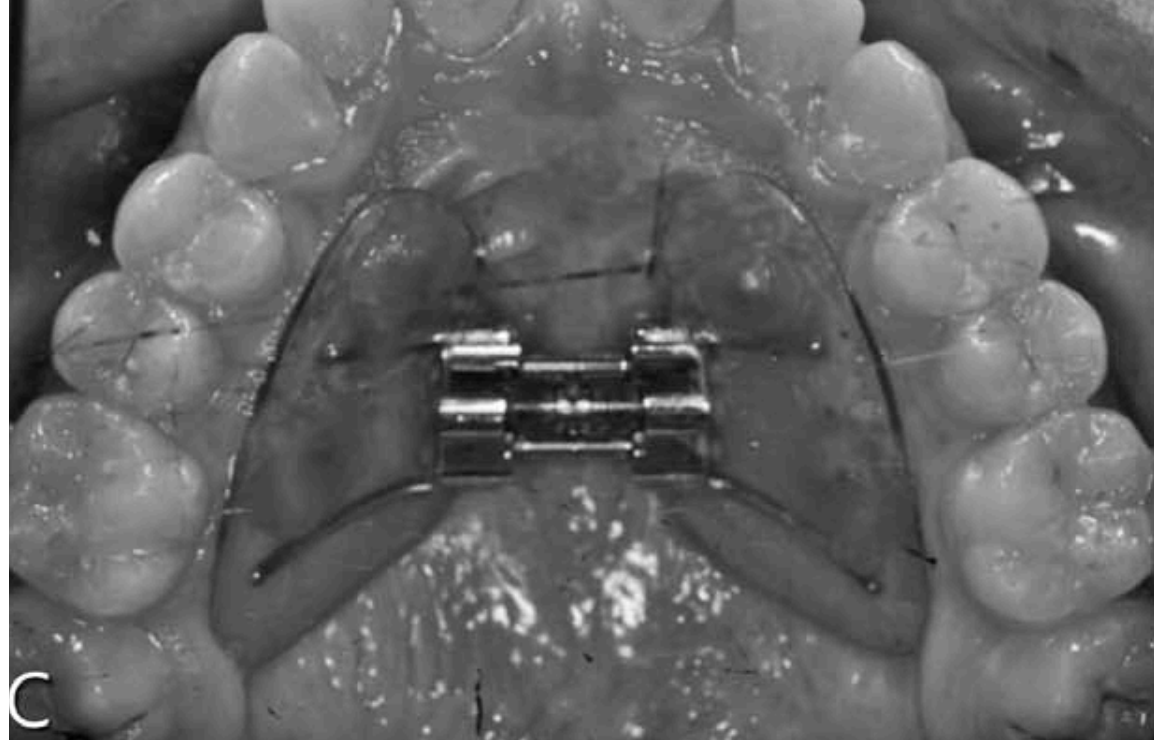
TAD-EXPANSION GROUP HAD NEGLIGIBLE DENTAL TIPPING



HYRAX GROUP HAD TIPPING IN THE UNBANDED TEETH TWICE OF THE BANDED TEETH WHICH HAD SIMILAR TIPPING TO TAD EXPANSION GROUP

Lu Lin et al; Angle Orthod 2015;85: 253-262





**FEMALES AGE 13-20**

	Bone-Borne Type					Tooth-Borne Type				
	First Premolar	Second Premolar	First Molar	Second Molar	<i>P</i> -Value <sup>a</sup> Multiple Comparisons	First Premolar	Second Premolar	First Molar	Second Molar	<i>P</i> -Value <sup>a</sup> Multiple Comparisons
Skeletal expansion ratio, 3/5	0.77	0.71	0.58	0.59		0.37	0.30	0.26	0.43	
Dental tipping/ alveolar bending, (9+10)/(7+8)	0.92	1.30	1.11	0.60		2.11	5.07	1.80	1.63	

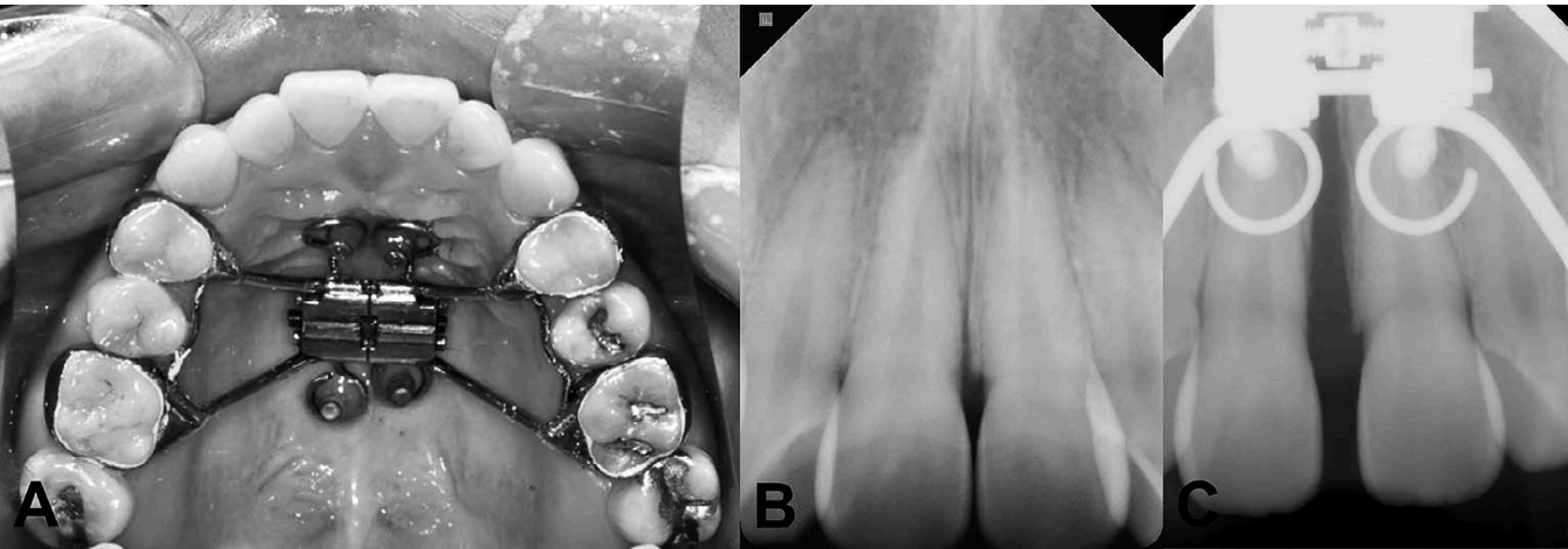
**Lu Lin et al; Angle Orthod 2015;85: 253-262**



# LONG TERM STABILITY OF THE NON-SURGICAL EXPANSION IN YOUNG ADULTS 19-22 Y.O.

86.96% (60/69) OF SUBJECTS OPENED UP

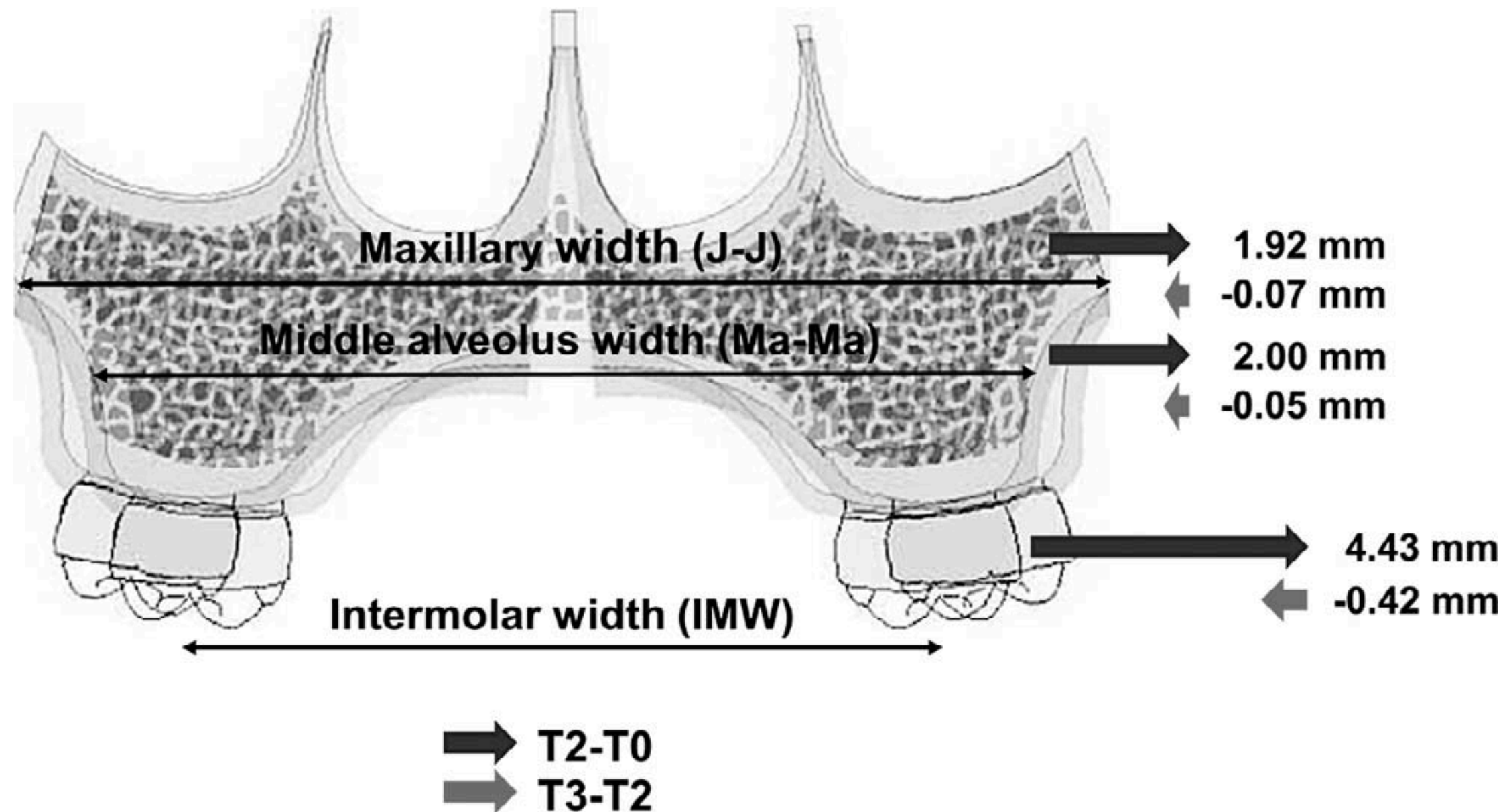
43.4% (2MM) EXPANSION AT J-J



*Choi S. et al; Angle Orthod 2016;86: 713-720*



# LONG TERM STABILITY OF THE NON-SURGICAL EXPANSION IN YOUNG ADULTS 19-22 Y.O.



**20 PATIENTS**

**30 MONTHS POST-EXPANSION**

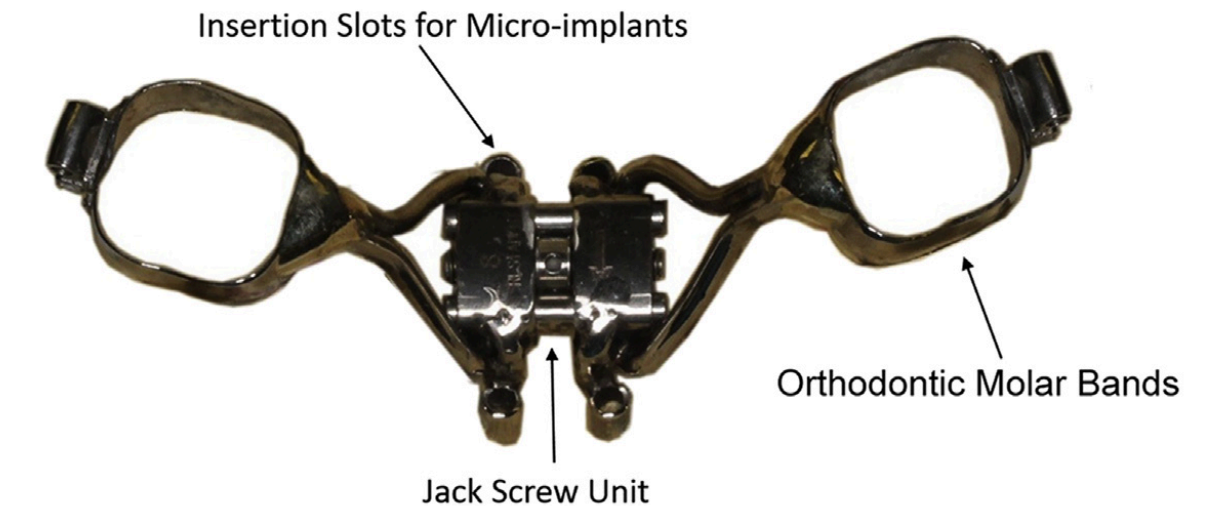
*Choi S. et al; Angle Orthod 2016;86: 713-720*



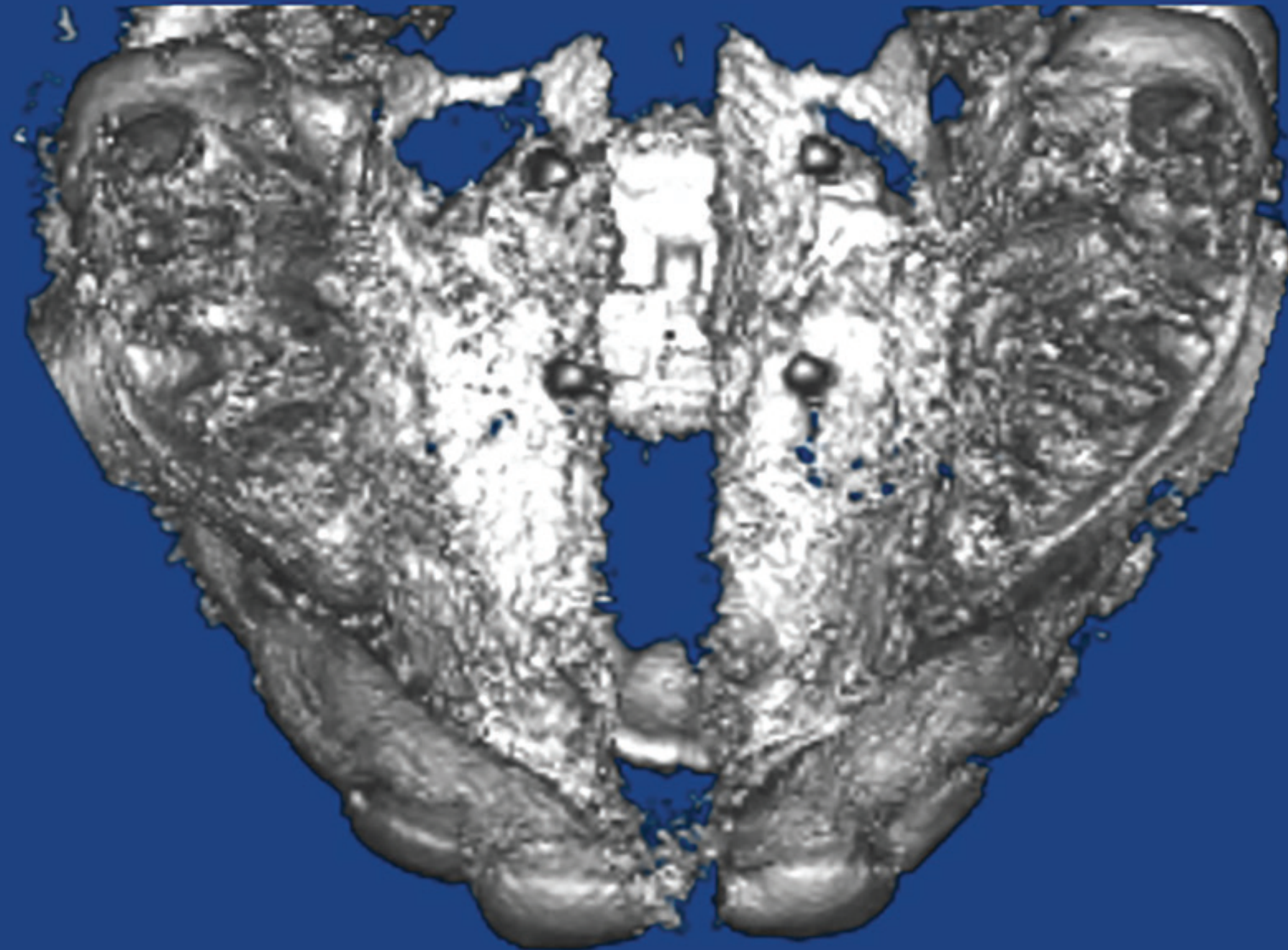
# Microimplant-assisted rapid palatal expansion appliance to orthopedically correct transverse maxillary deficiency in an adult

Chuck Carlson,<sup>a</sup> Jay Sung,<sup>b</sup> Ryan W. McComb,<sup>c</sup> Andre Wilson Machado,<sup>d</sup> and Won Moon<sup>e</sup>

*Tustin, Los Angeles, and Culver City, Calif, and Salvador, Bahia, Brazil*







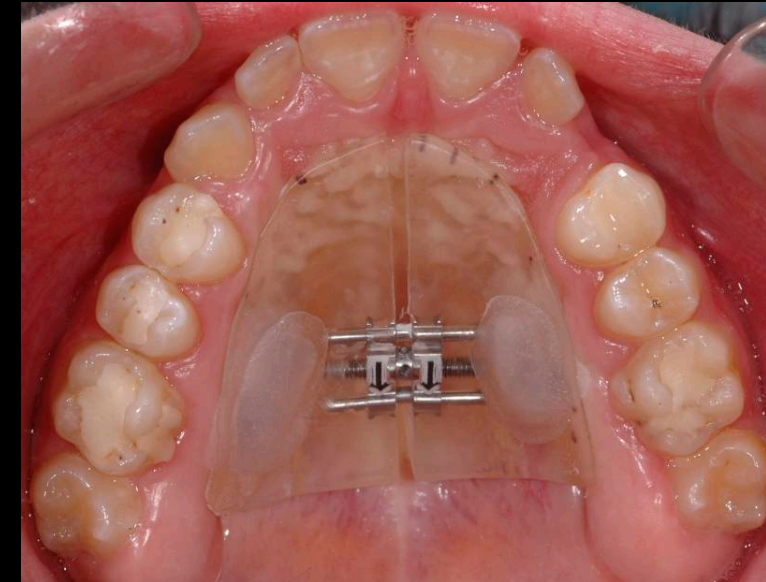
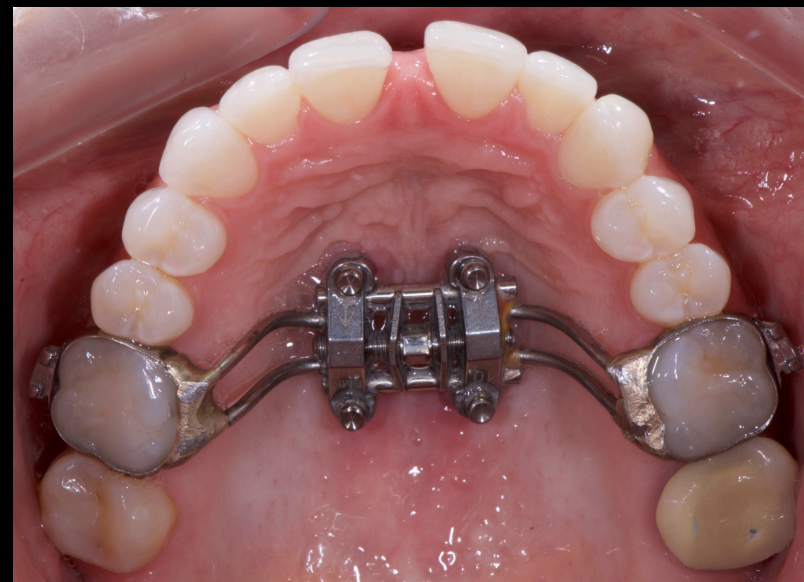
## Non-surgical treatment of transverse deficiency in adults using Microimplant-assisted Rapid Palatal Expansion (MARPE)

Daniel Paludo Brunetto<sup>1</sup>, Eduardo Franzzotti Sant'Anna<sup>2</sup>, Andre Wilson Machado<sup>3</sup>, Won Moon<sup>4</sup>





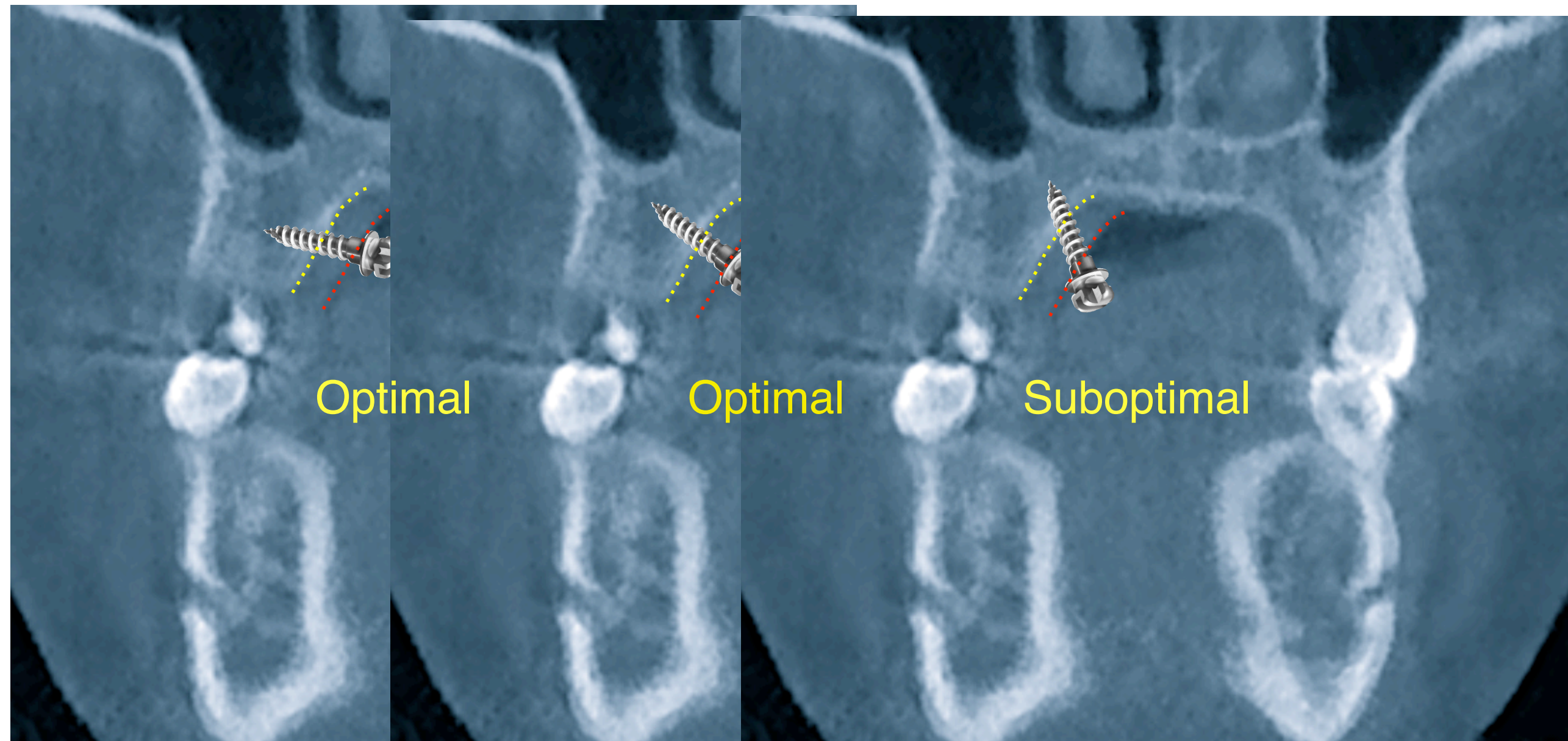
**MSE**



**Acrylic TAD RPE**



## DEGREE OF INSERTION



90°

45°

20°

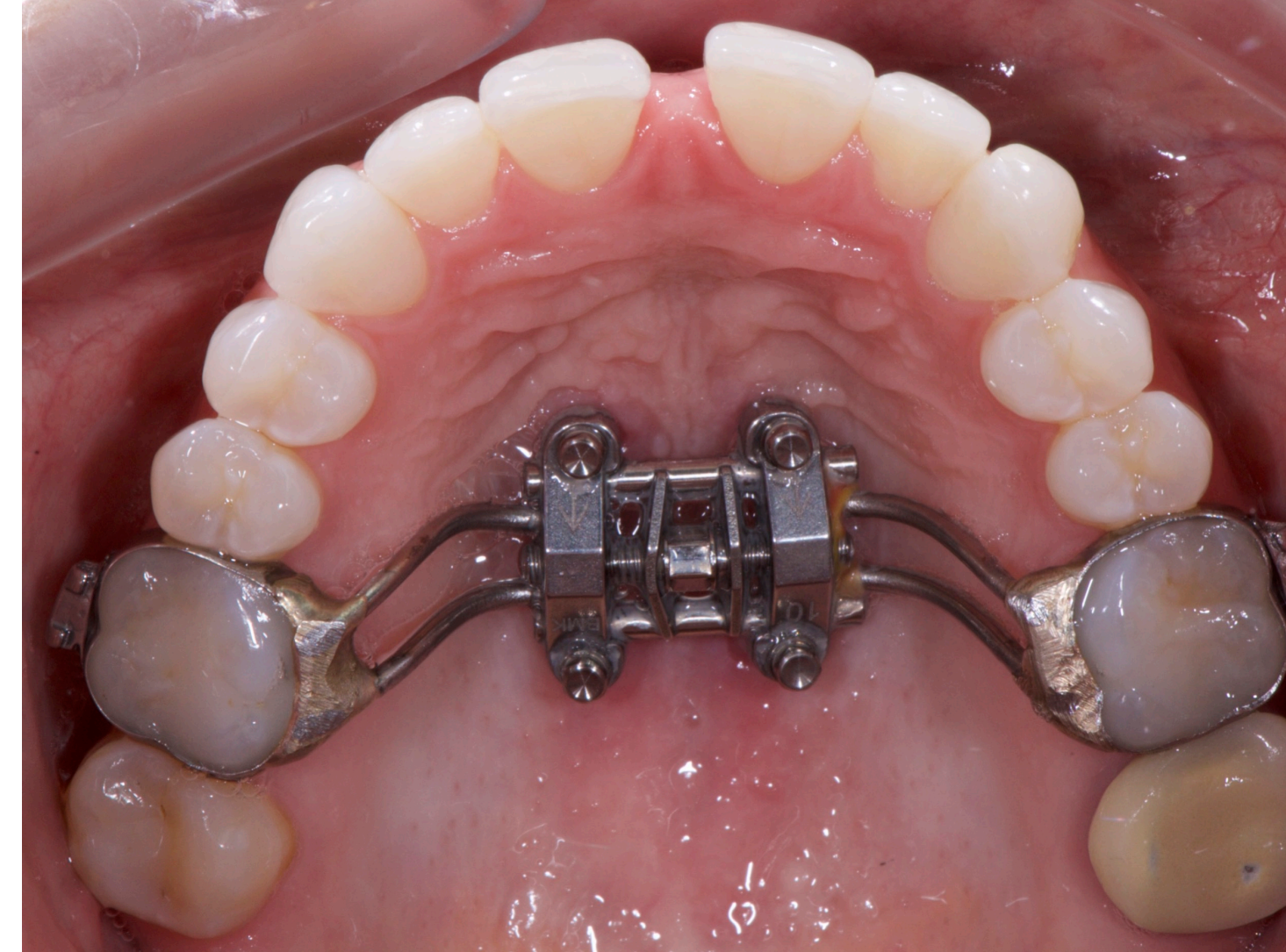




**AGE 9-14**

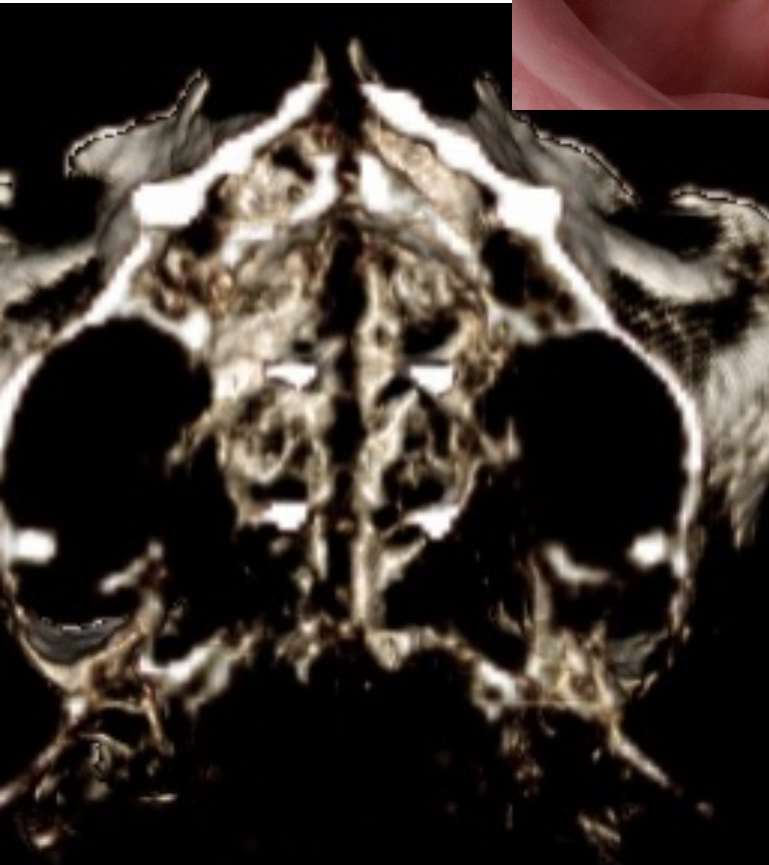


**AGE 14-18**



**AGE 5-?**

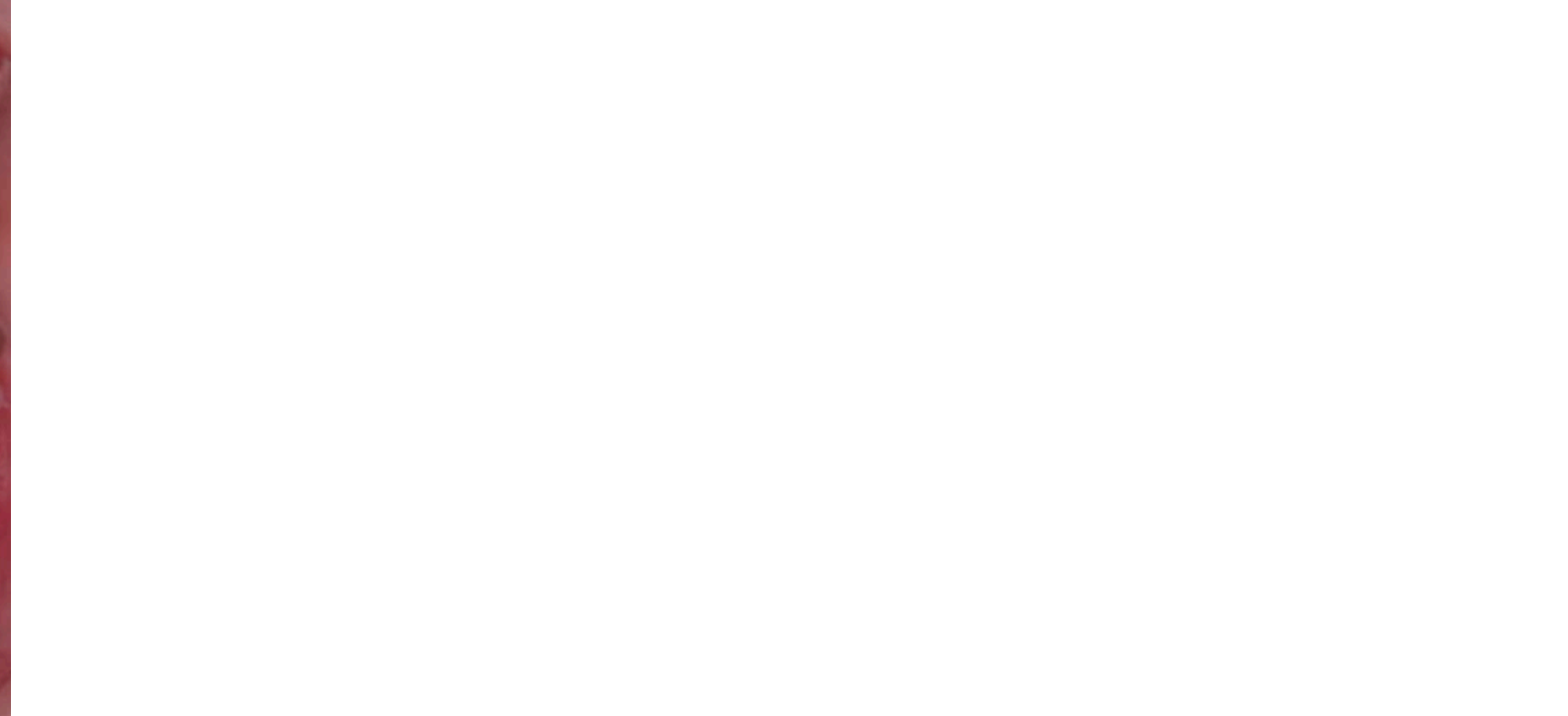




64 Y.O. GIRL







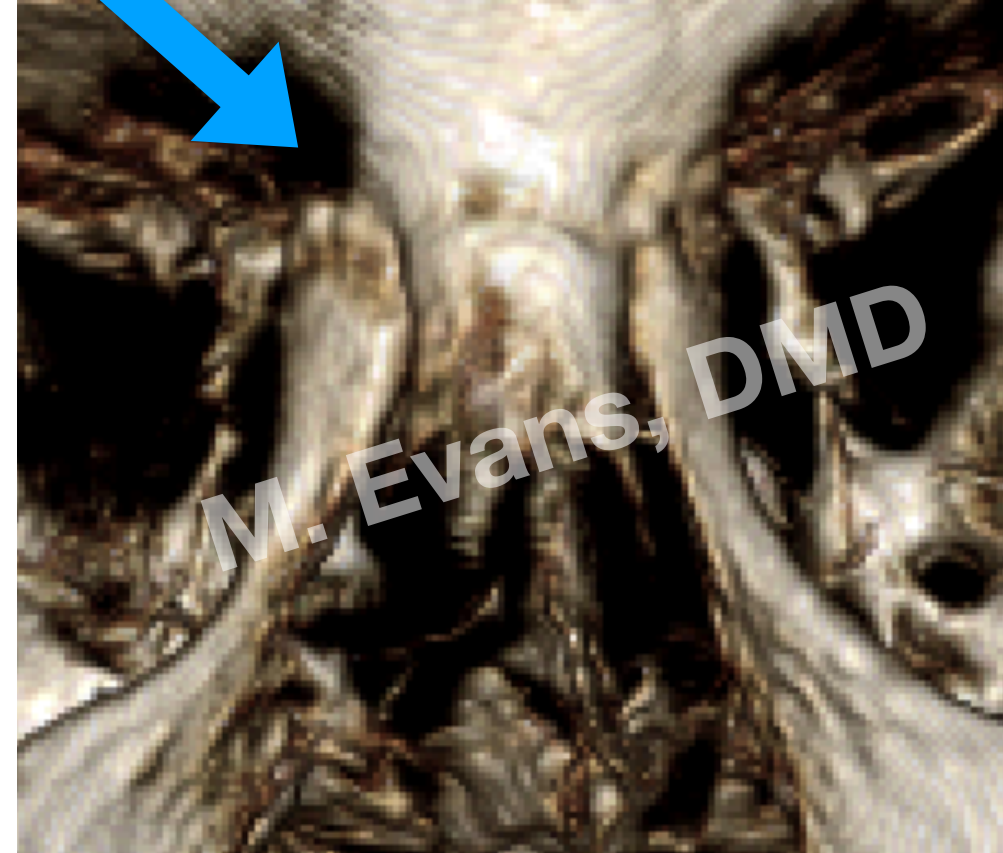
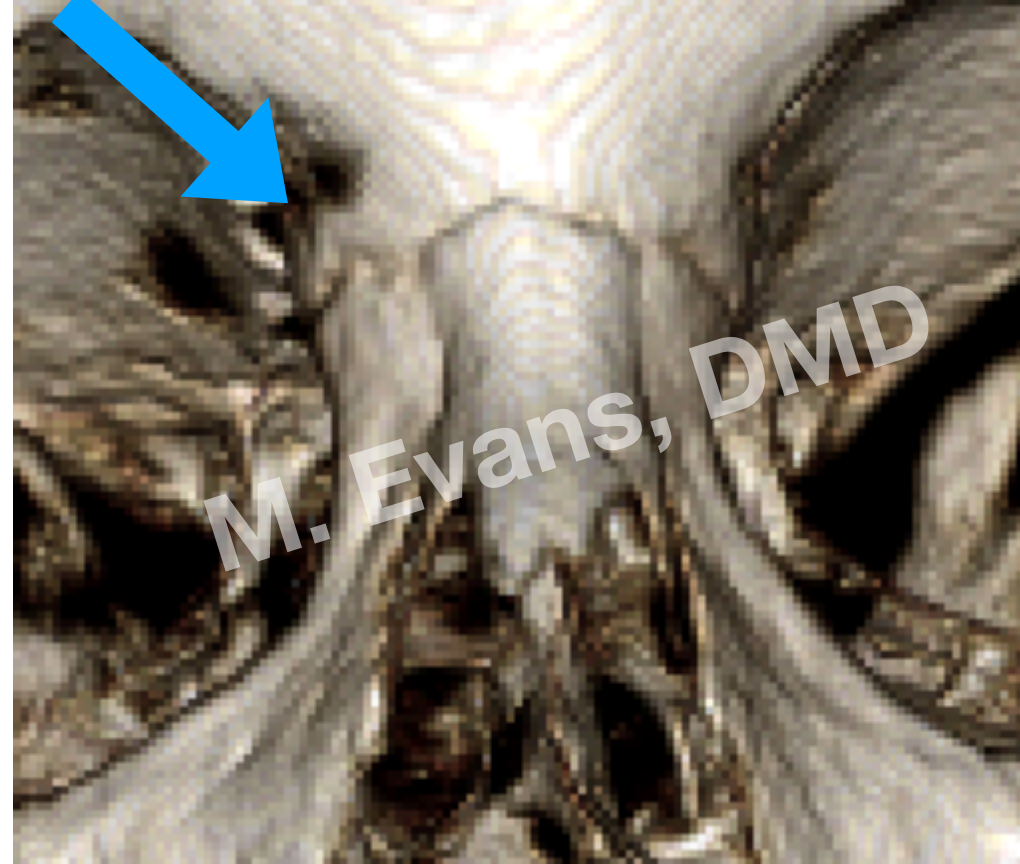




13 Y.O.MALE







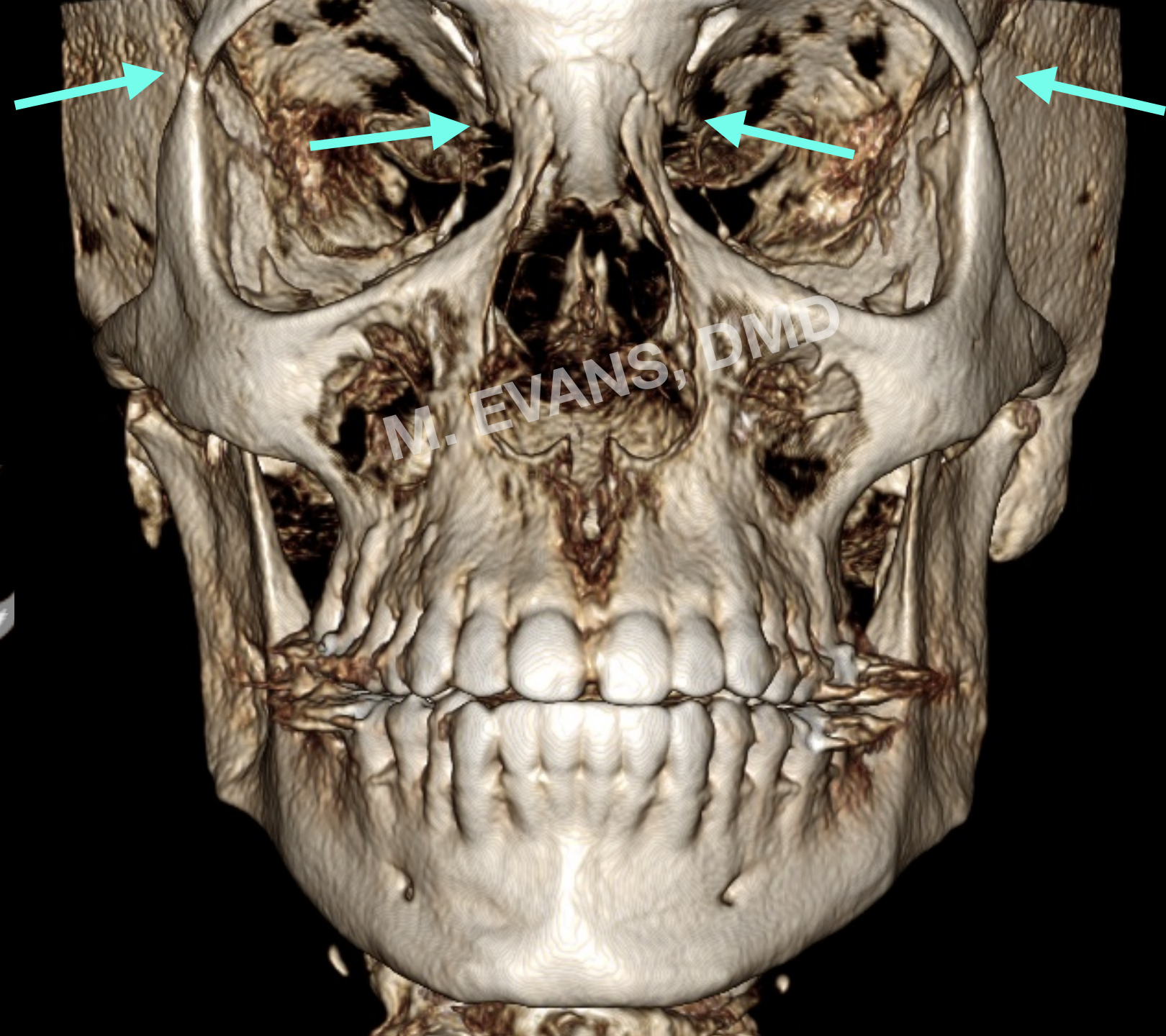
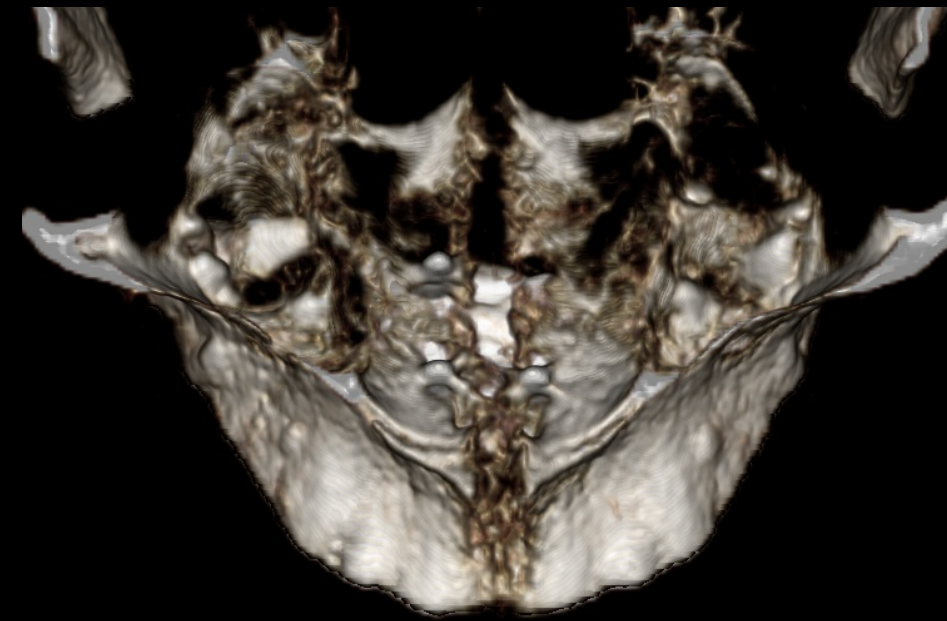








**40 Y.O. FEMALE**



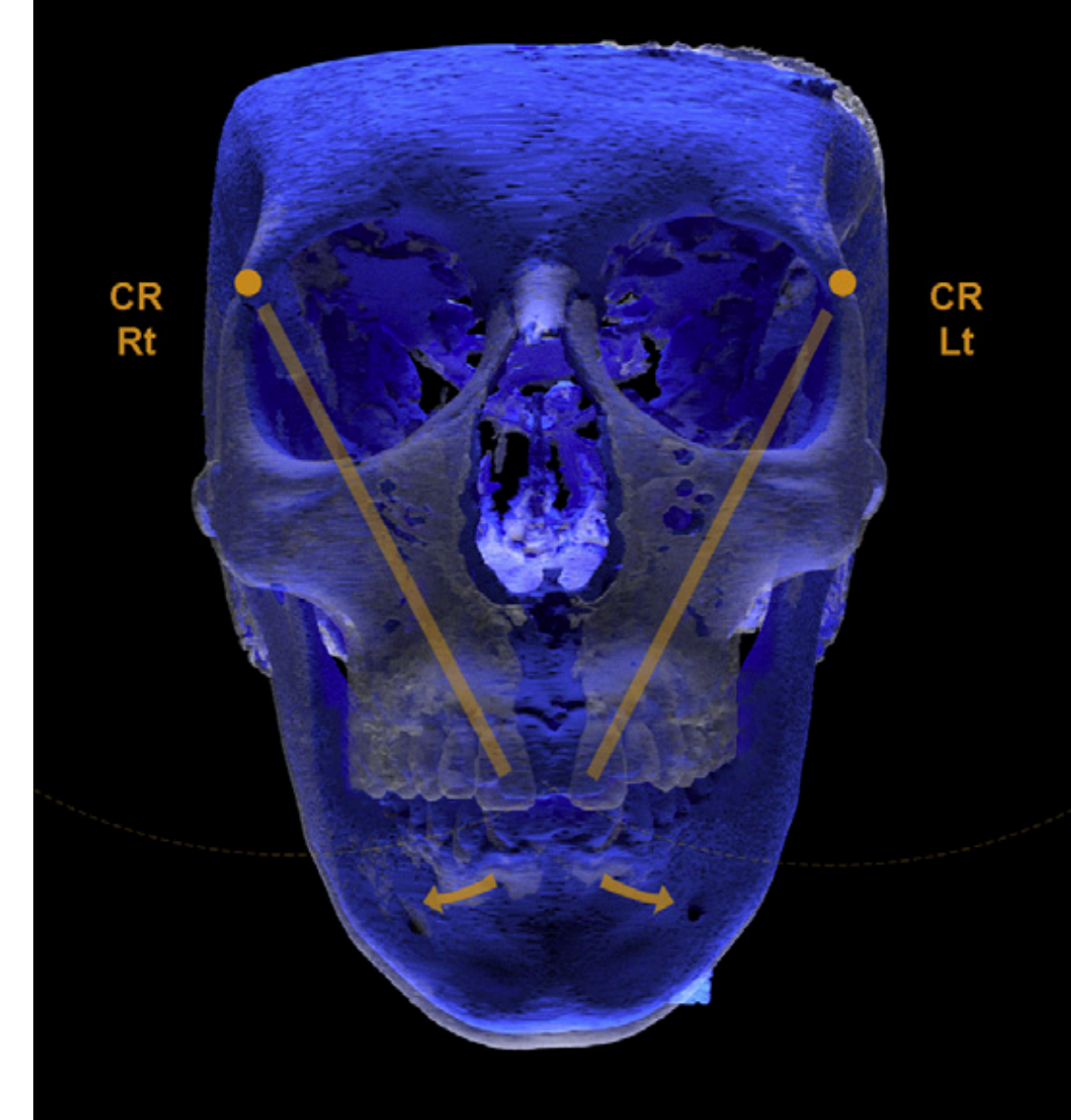






# Midfacial changes in the coronal plane induced by microimplant-supported skeletal expander, studied with cone-beam computed tomography images

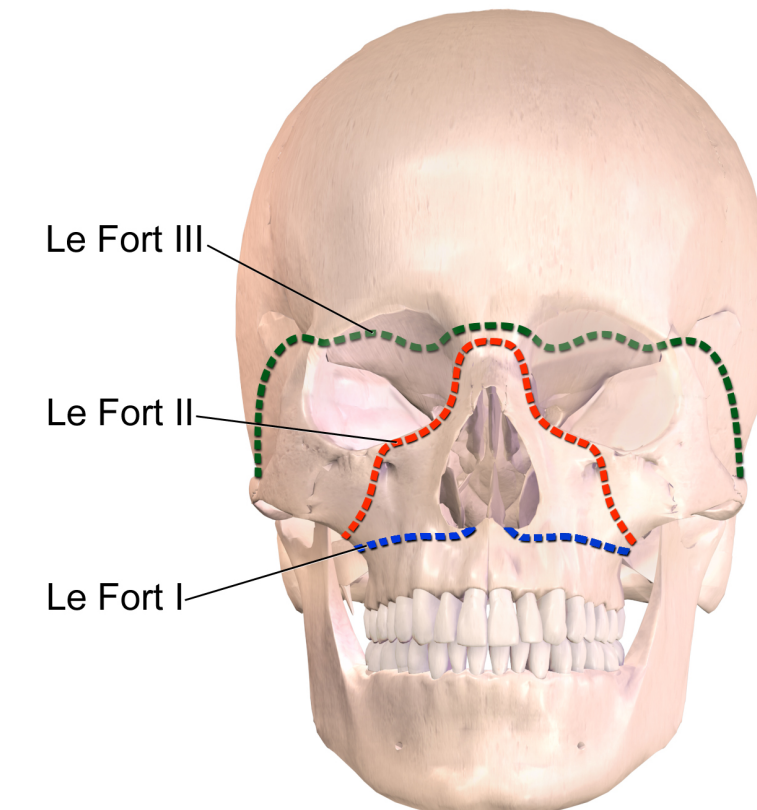
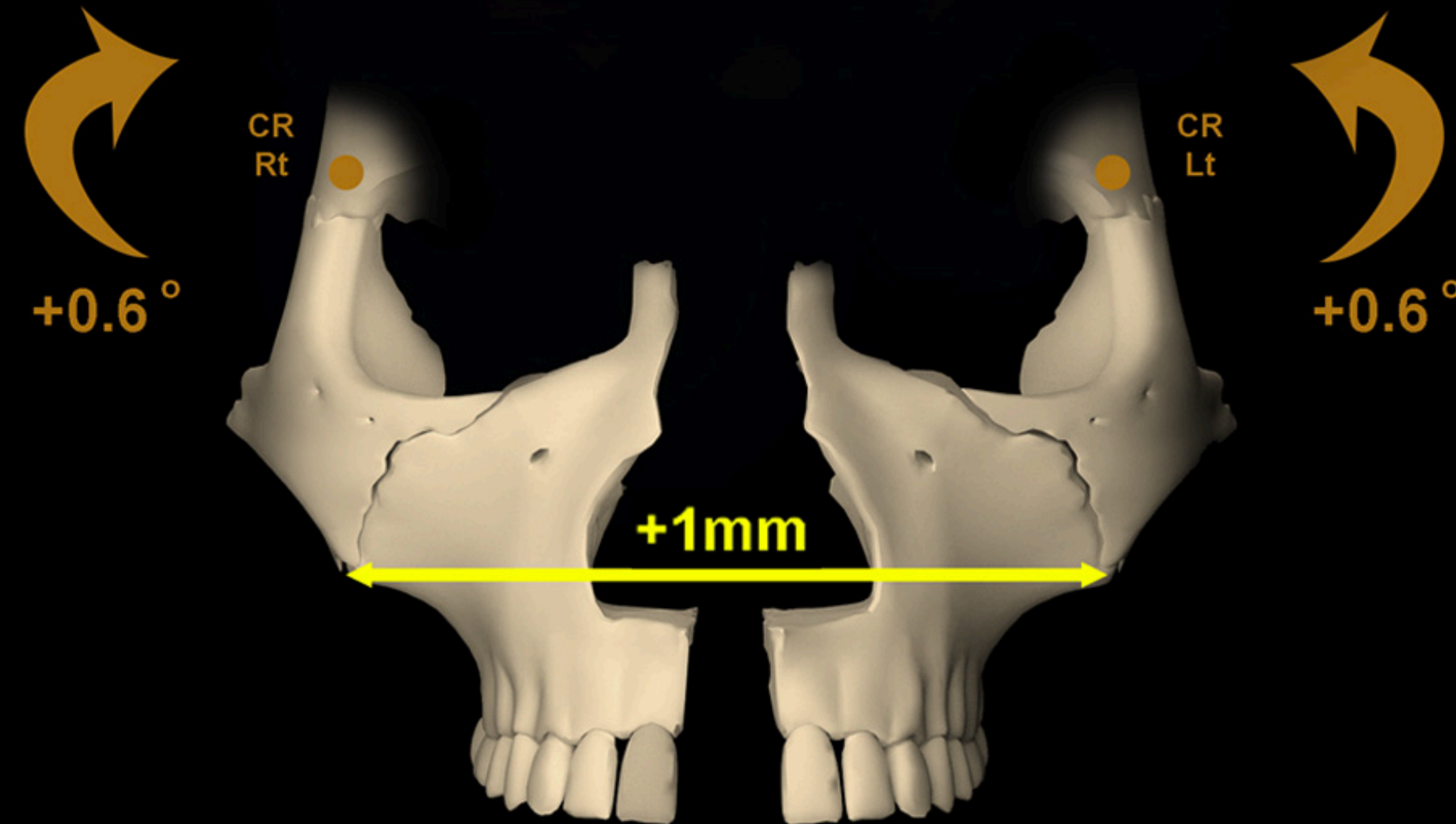
Daniele Cantarella,<sup>a</sup> Ramon Dominguez-Mompell,<sup>b</sup> Christoph Moschik,<sup>b</sup> Sanjay M. Mallya,<sup>c</sup> Hsin Chuan Pan,<sup>b</sup> Mohammed R. Alkahtani,<sup>a</sup> Islam Elkenawy,<sup>b</sup> and Won Moon<sup>b</sup>  
*Los Angeles, Calif*



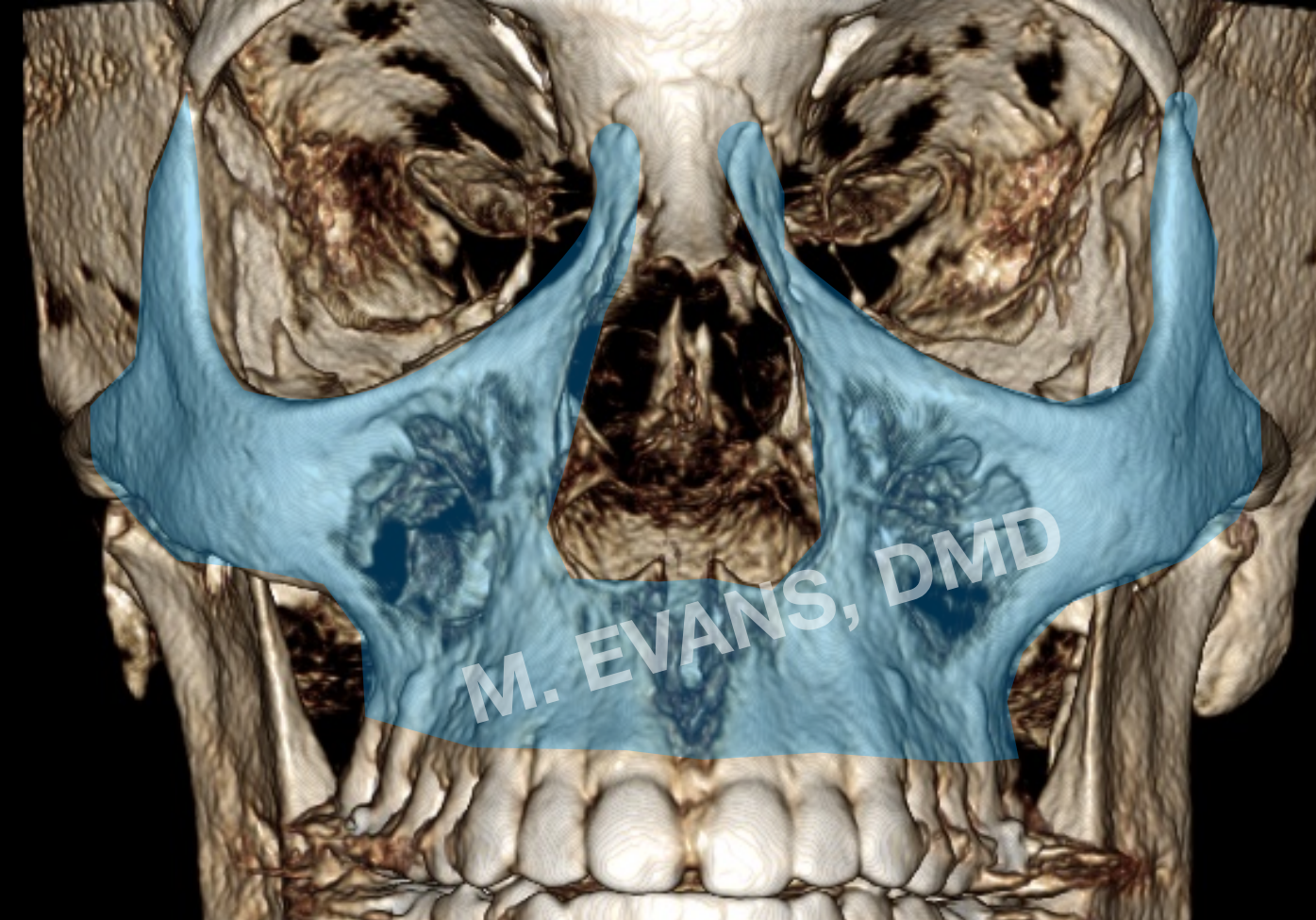


# Midfacial changes in the coronal plane induced by microimplant-supported skeletal expander, studied with cone-beam computed tomography images

Daniele Cantarella,<sup>a</sup> Ramon Dominguez-Mompell,<sup>b</sup> Christoph Moschik,<sup>b</sup> Sanjay M. Mallya,<sup>c</sup> Hsin Chuan Pan,<sup>b</sup> Mohammed R. Alkahtani,<sup>a</sup> Islam Elkenawy,<sup>b</sup> and Won Moon<sup>b</sup>  
*Los Angeles, Calif*





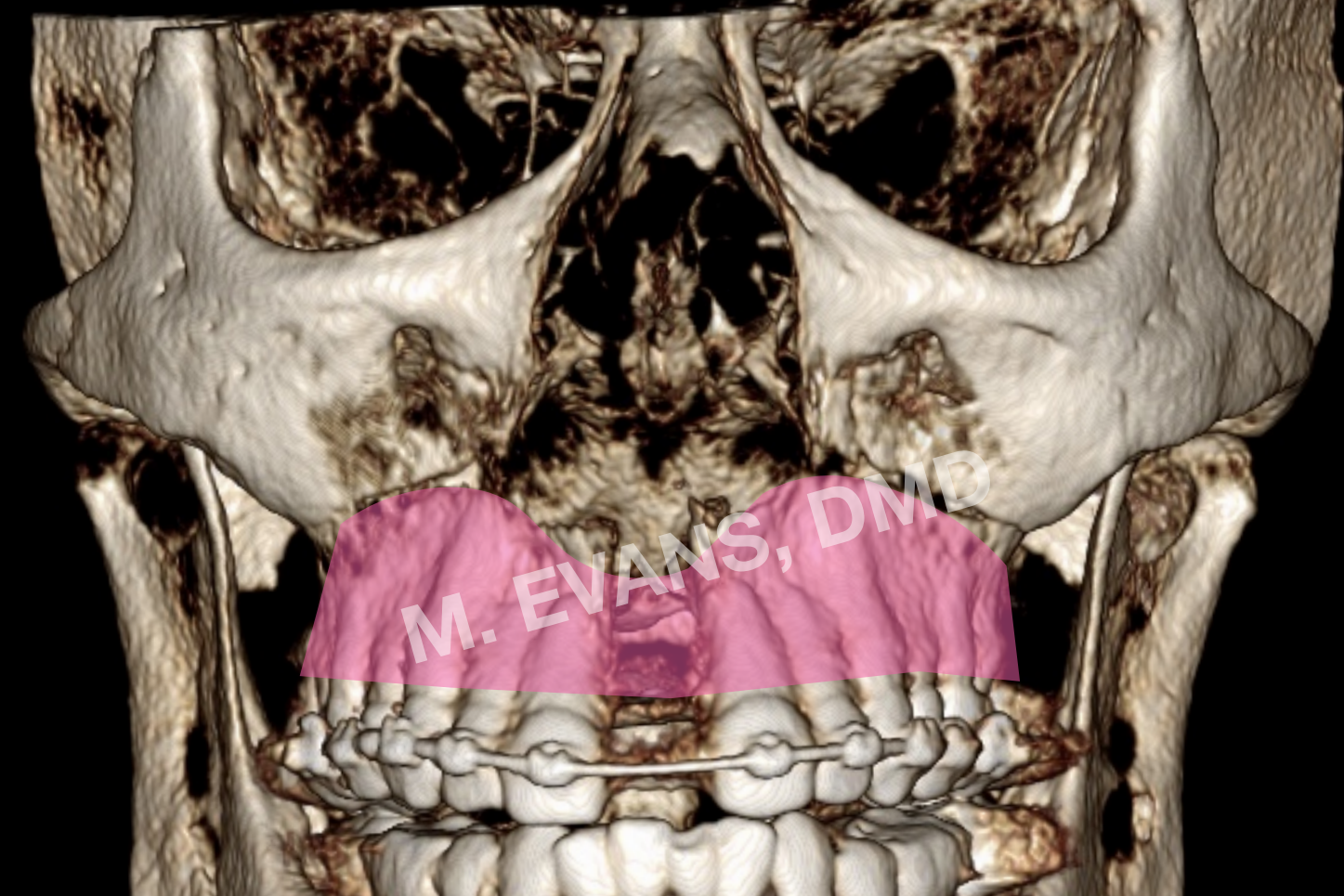


**NON-SURGICAL MARPE**

**LE FORT 3**



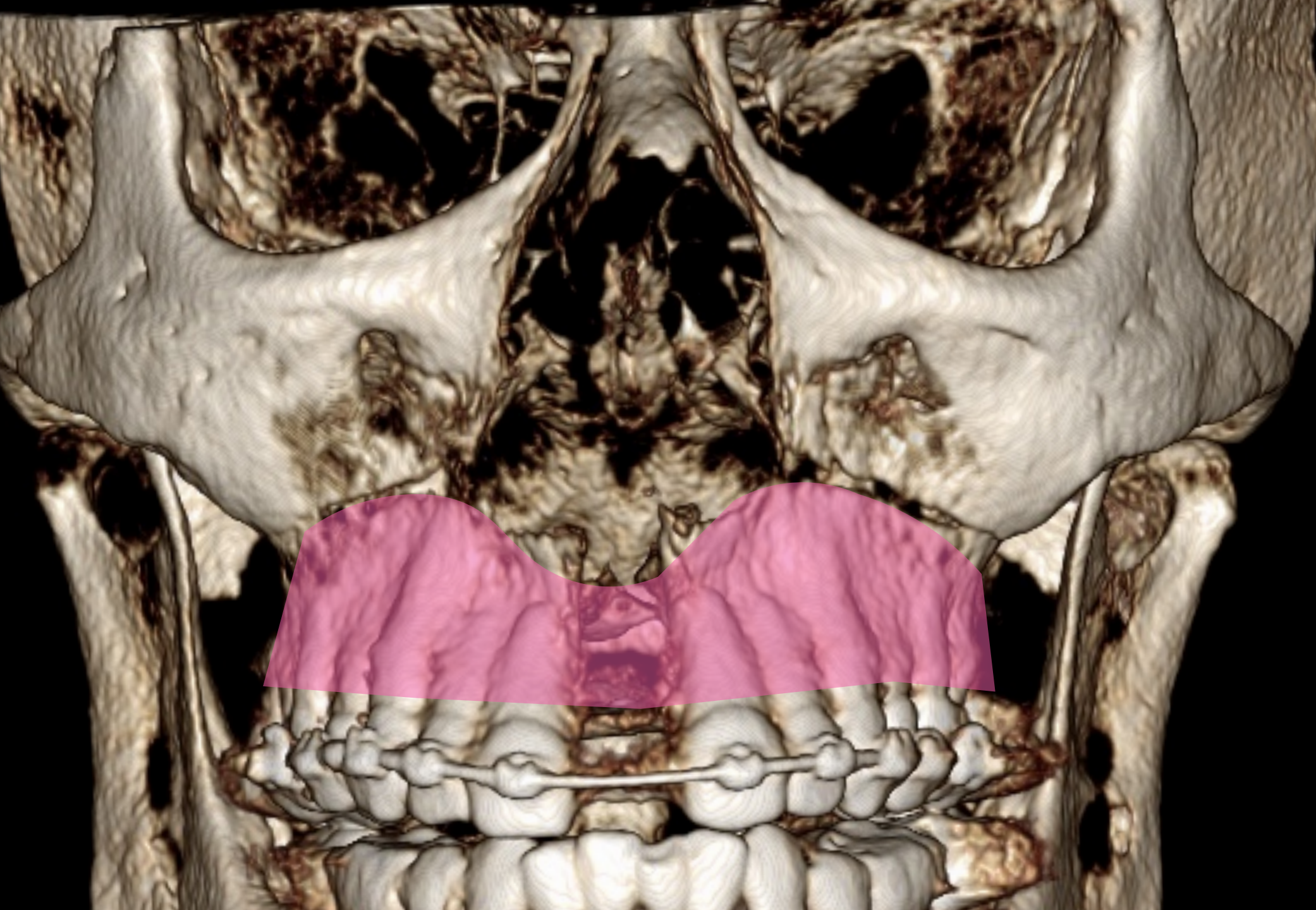
**MAXILLA**



**SURGICAL SARPE, DOME**

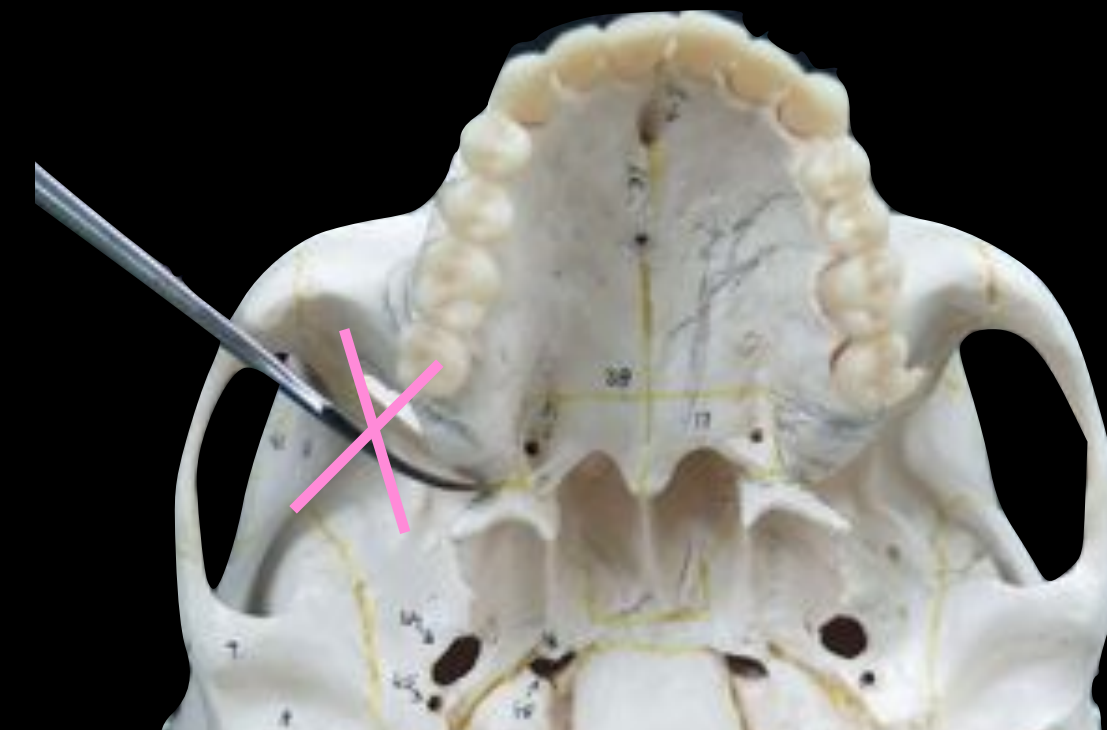
**LE FORT 1**





**DOMES = SARPE WITHOUT PTERYGOMAXILLARY DISJUNCTION  
UTILIZING MSE EXPANDERS**

**LE FORT 1 OSTEOTOMY**



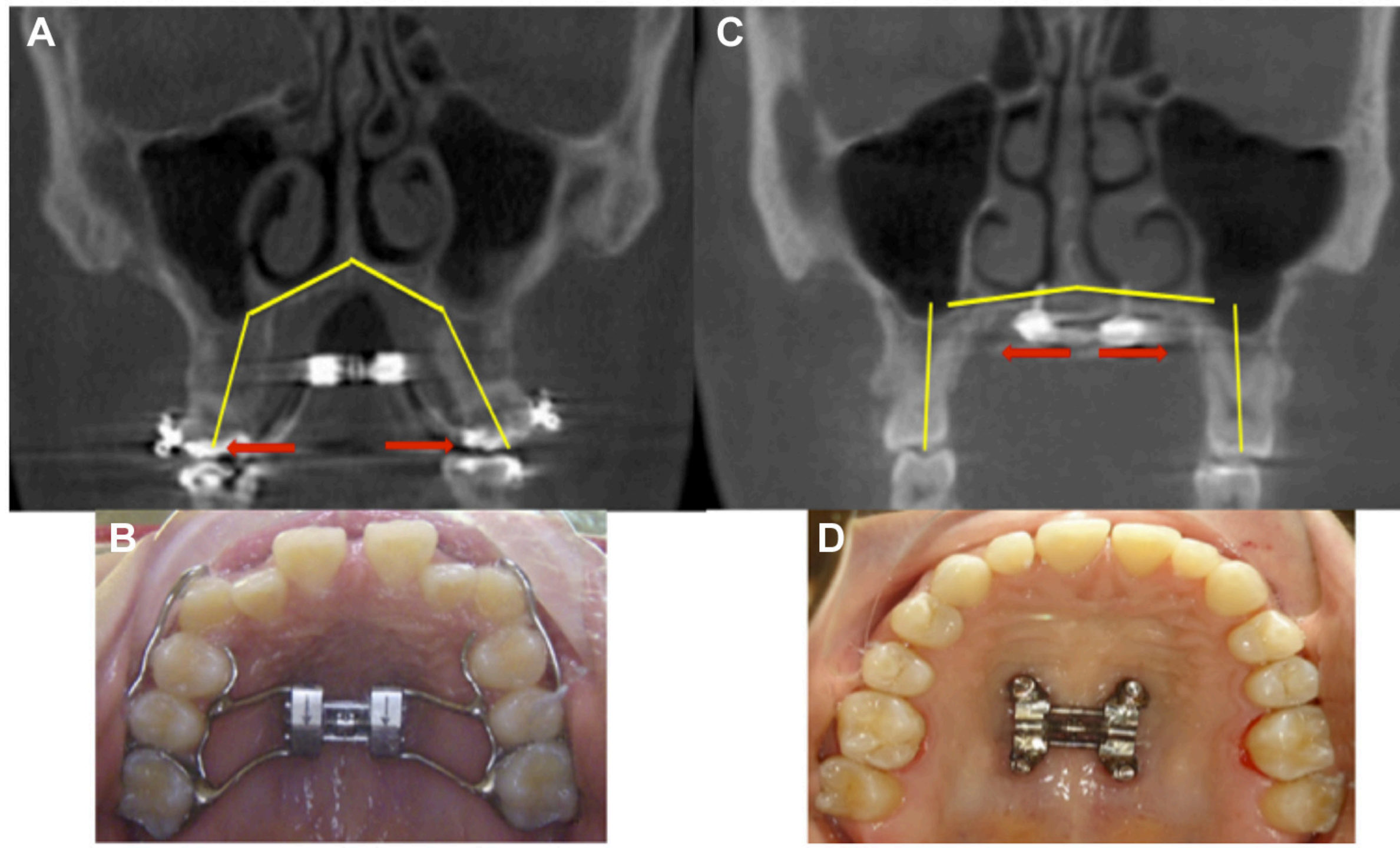


# Distraction Osteogenesis Maxillary Expansion (DOME) for Adult Obstructive Sleep Apnea Patients with High Arched Palate

Stanley Yung-Chuan Liu, MD, DDS<sup>1</sup>,  
Christian Guillemineault, MD, DBiol<sup>2</sup>, Leh-Kiong Huon, MD<sup>3,4</sup>,  
and Audrey Yoon, DDS<sup>5</sup>

AMERICAN ACADEMY OF  
OTOLARYNGOLOGY—  
HEAD AND NECK SURGERY  
FOUNDATION

Otolaryngology—  
Head and Neck Surgery  
2017, Vol. 157(2) 345–348  
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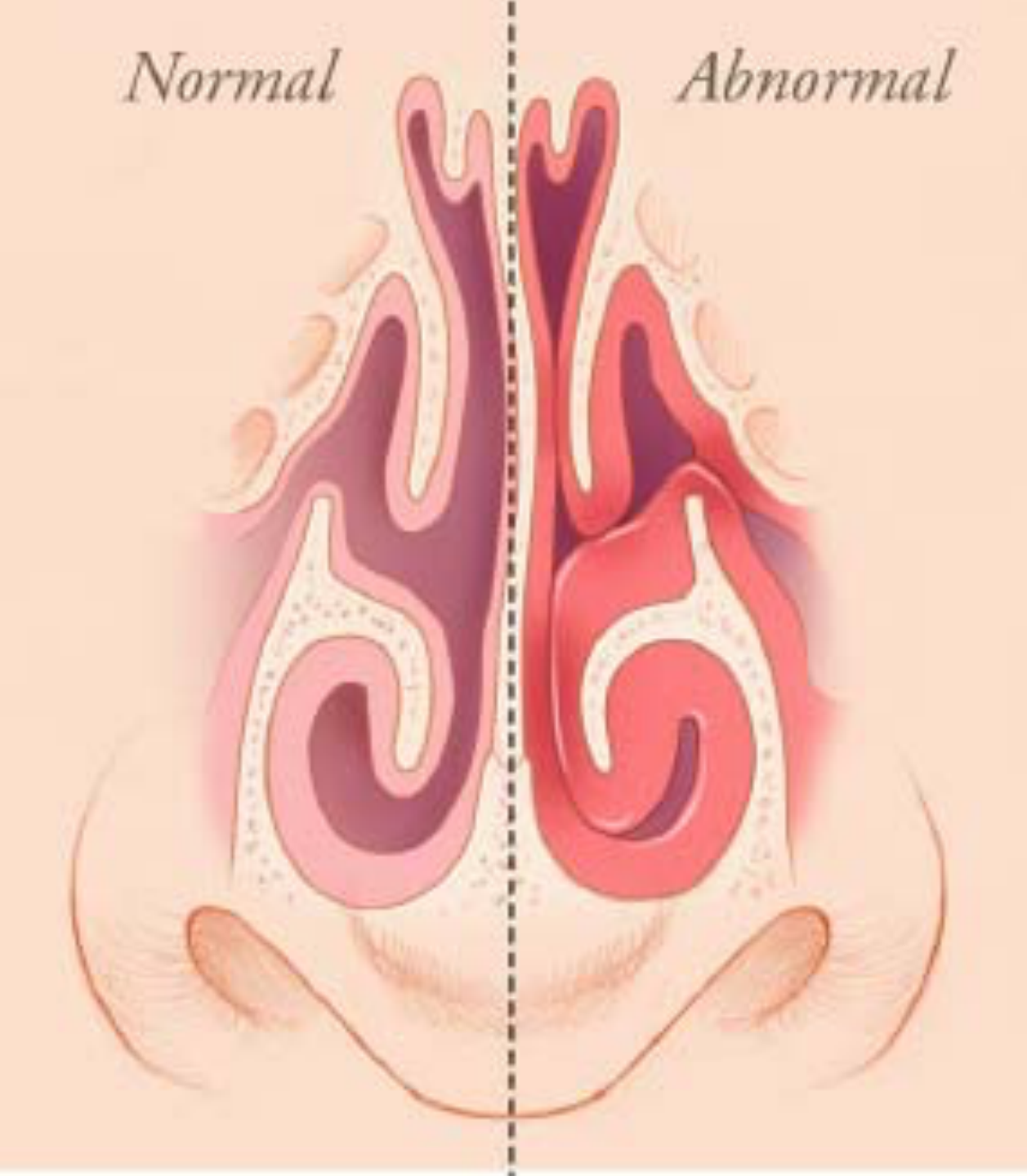




**Table 1.** Demographic, Subjective, and Objective Parameters before and after Distraction Osteogenesis Maxillary Expansion (DOME) Procedure.<sup>a</sup>

Characteristic	Before, Mean $\pm$ SD	After, Mean $\pm$ SD	Paired <i>t</i> Test, <i>P</i> Value
BMI	26.8 $\pm$ 5.0	26.4 $\pm$ 5.5	0.44
ESS	12.3 $\pm$ 4.1	7.8 $\pm$ 4.8	<0.001
NOSE	11.7 $\pm$ 5.3	3.85 $\pm$ 3.23	<0.001
AHI	30.9 $\pm$ 27.1	14.2 $\pm$ 9.3	<0.01
ODI	23.0 $\pm$ 28.4	8.7 $\pm$ 6.9	0.07
Reff Insp (left)	1.4 $\pm$ 0.4	1.0 $\pm$ 0.5	<0.001
Reff Insp (right)	1.4 $\pm$ 0.4	0.9 $\pm$ 0.3	<0.001
Nasal floor width—anterior, mm	22.7 $\pm$ 4.58	27.4 $\pm$ 4.7	<0.001
Nasal floor width—posterior, mm	27.9 $\pm$ 4.3	32.1 $\pm$ 4.8	<0.001





NASAL AIRWAY RESISTANCE COMPRISES 50-75% IN OSA PATIENTS

WU J ET LA, MEDICINE, 96(5), 2017

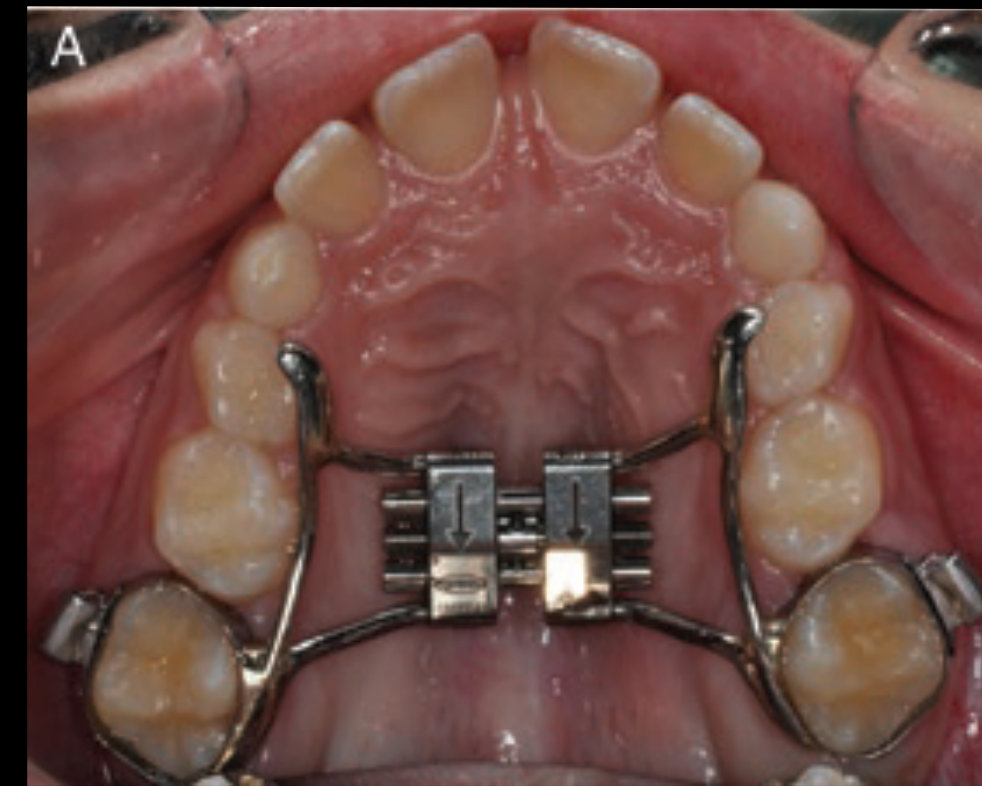


Randomized Controlled Trial

# Effects on nasal airflow and resistance using two different RME appliances: a randomized controlled trial

Farhan Bazargani<sup>1</sup>, Anders Magnuson<sup>2</sup> and Björn Ludwig<sup>3,4</sup>

<sup>1</sup>Department of Orthodontics, Postgraduate Dental Education Center, Örebro, Sweden, <sup>2</sup>Clinical Epidemiology and Biostatistics Unit, Örebro University Hospital, Örebro, Sweden, <sup>3</sup>Private Orthodontic Office, Traben-Trarbach, Germany and <sup>4</sup>Department of Orthodontics, University of Saarland, Homburg/Saar, Germany





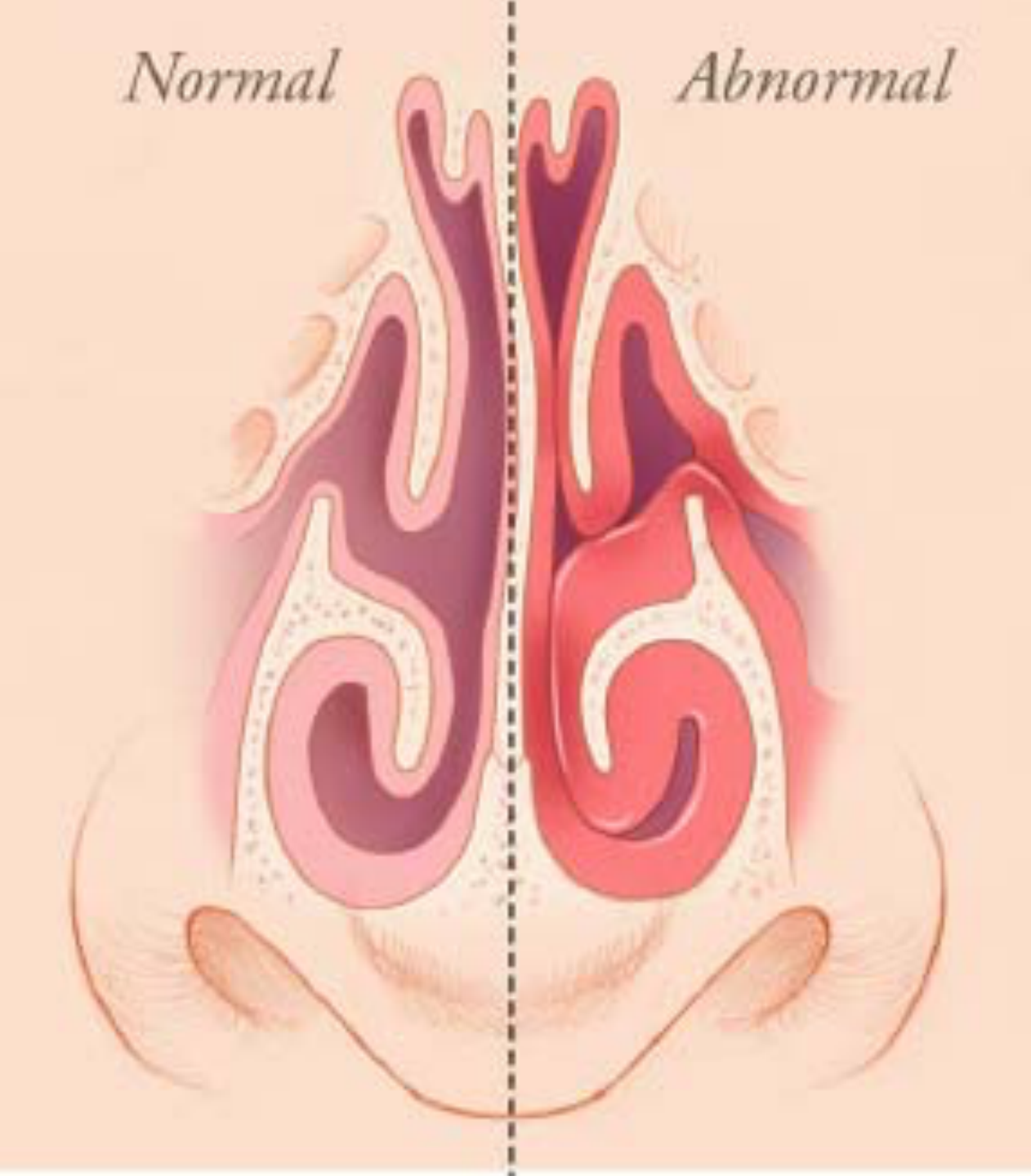
	P1	P2	M1
SKELETAL EXPANSION	62.2%	54.6%	50.8%
NASAL EXPANSION	52%	46.9%	44.4%

**OUR STUDY:**

**27 PATIENTS AGE 15YO**

**7 MALES  
20 FEMALES**



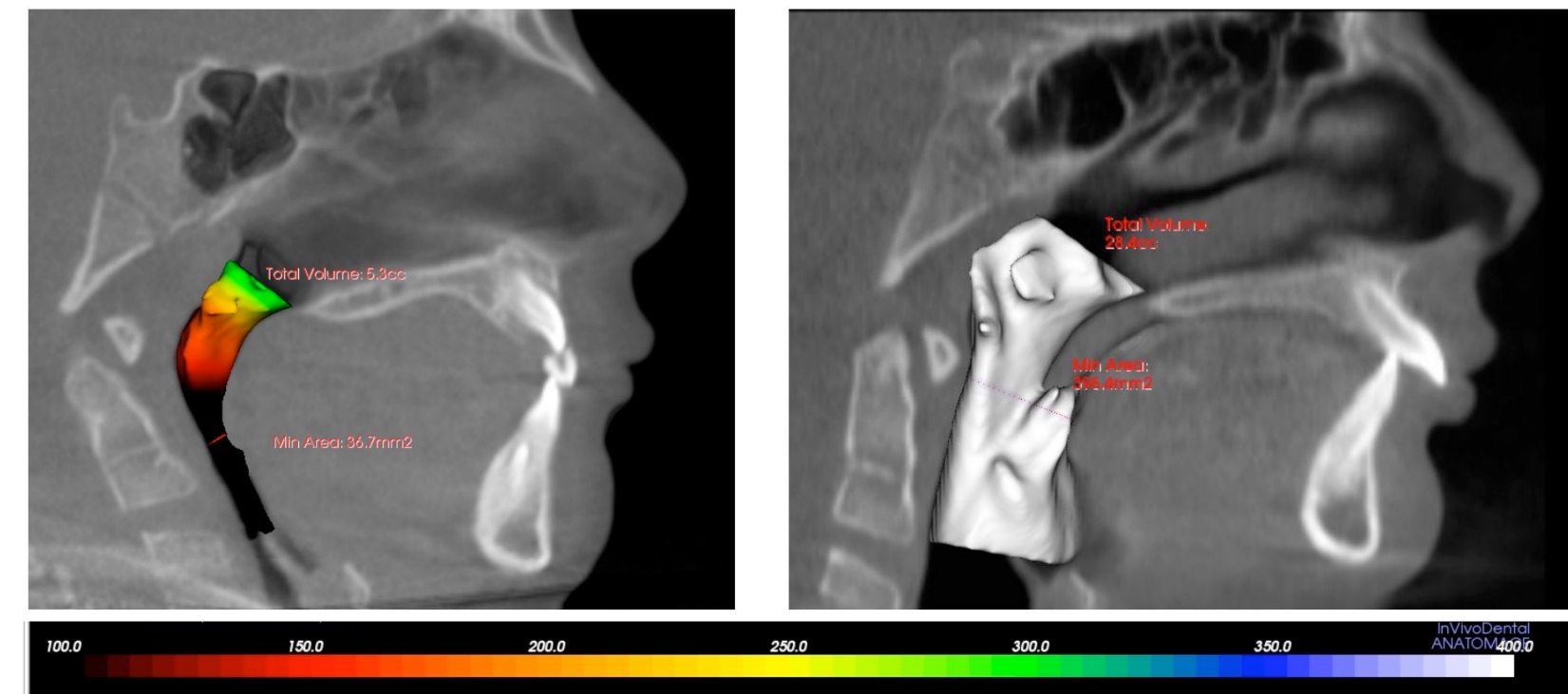


NASAL AIRWAY RESISTANCE COMPRISES 50-75% IN OSA PATIENTS



WU J ET LA, MEDICINE, 96(5), 2017







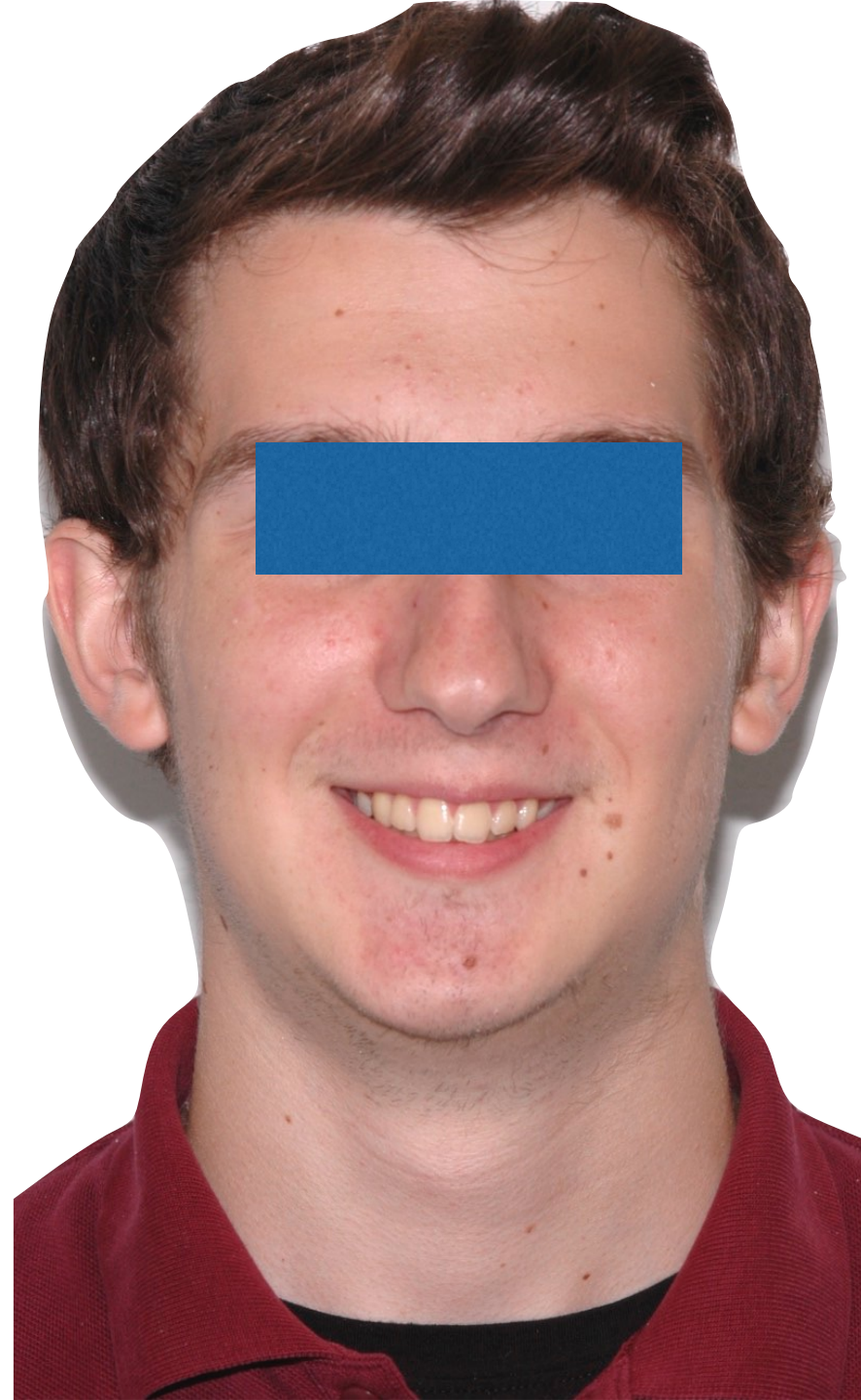
IDENTICAL 16 Y.O. TWINS

WHICH ONE HAS OSA?

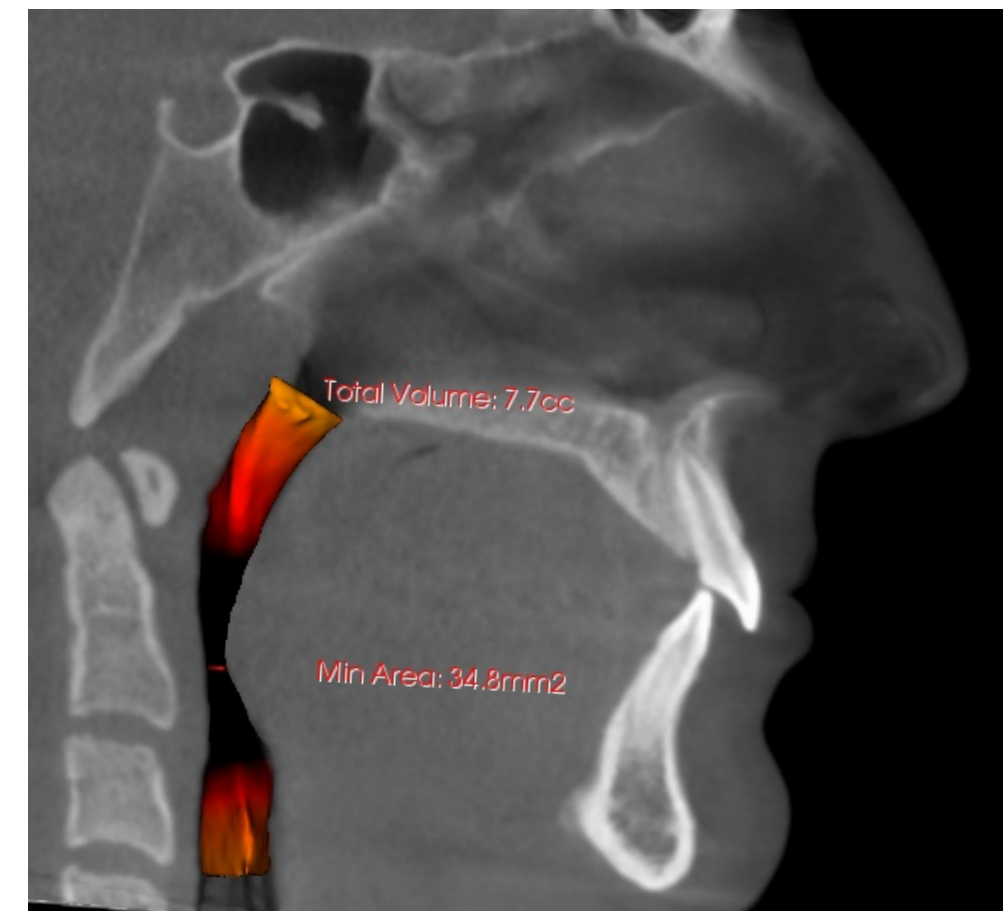
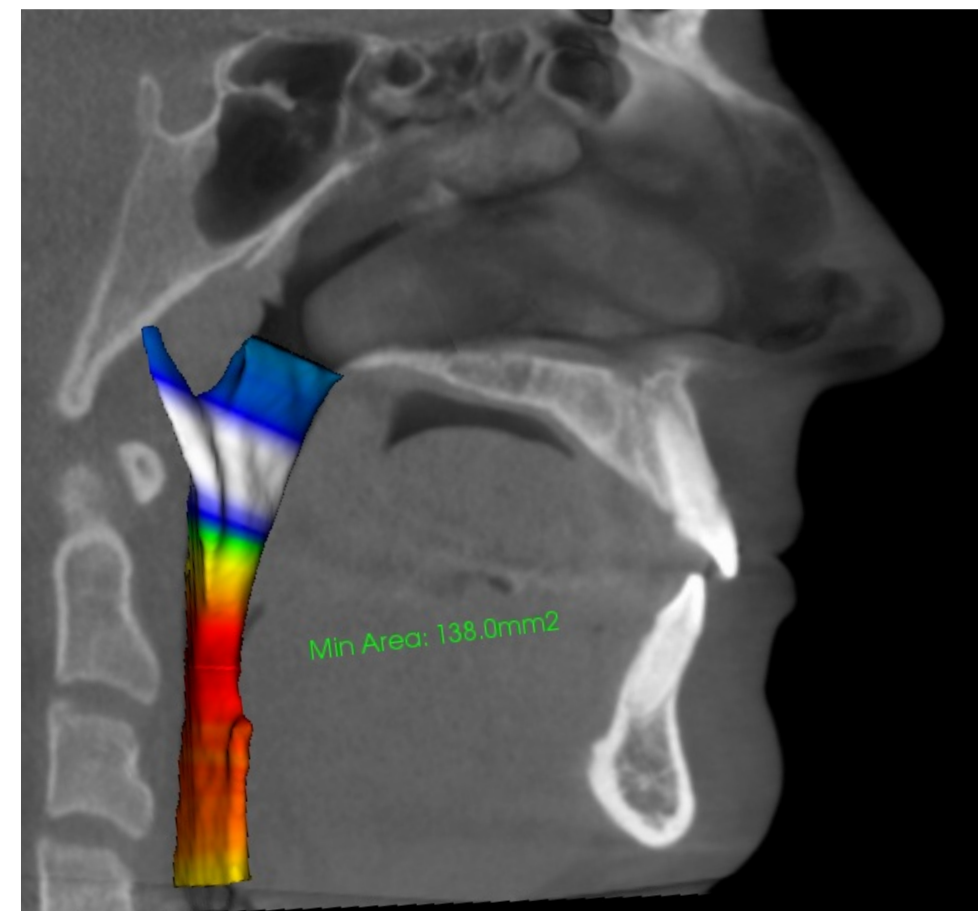
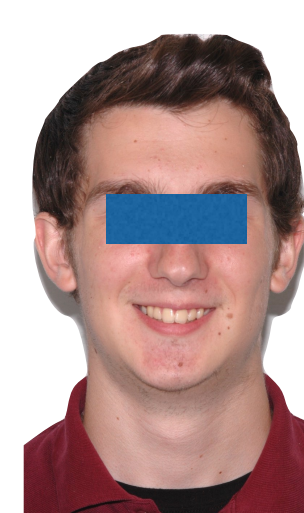
AHI -16



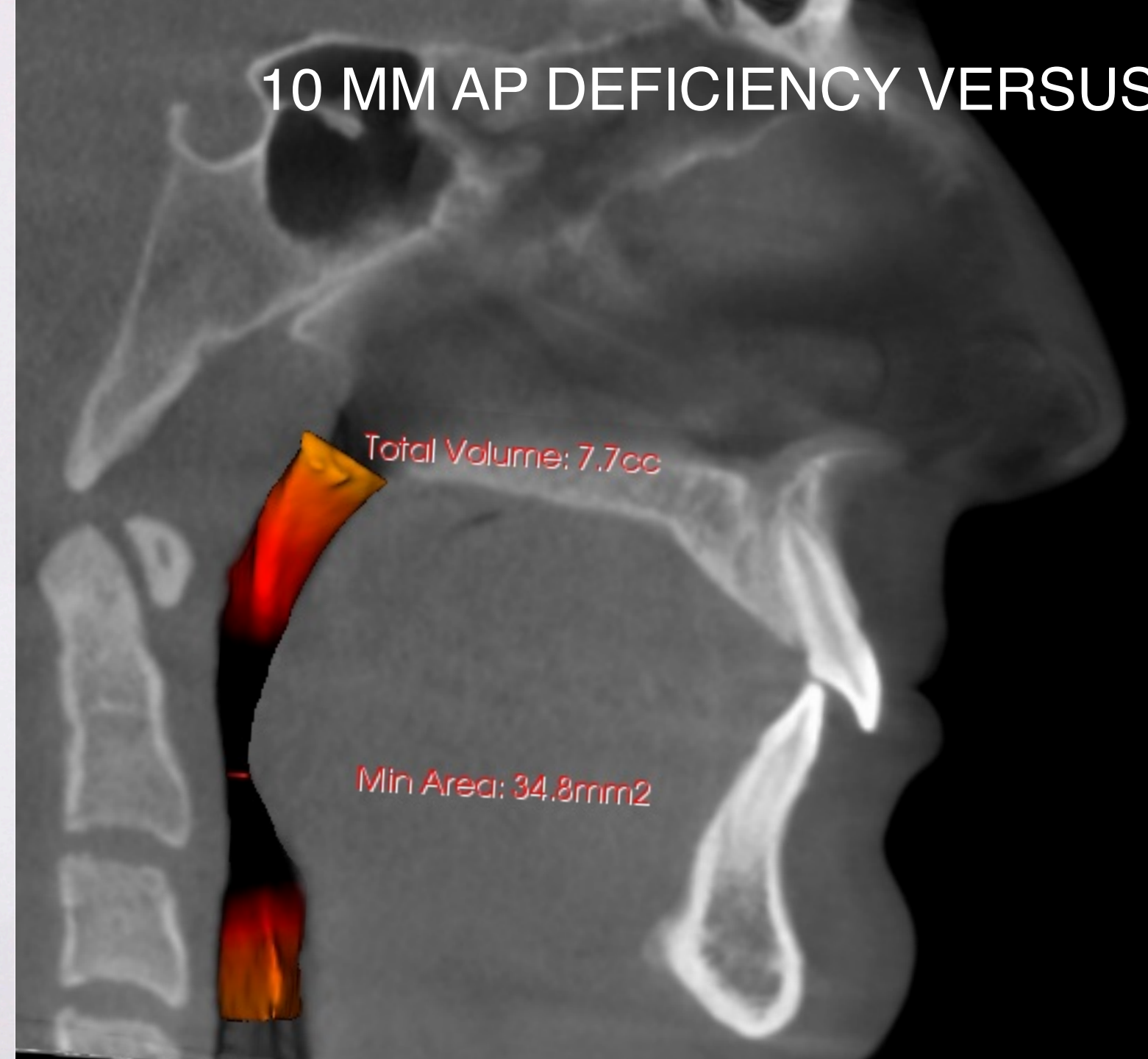




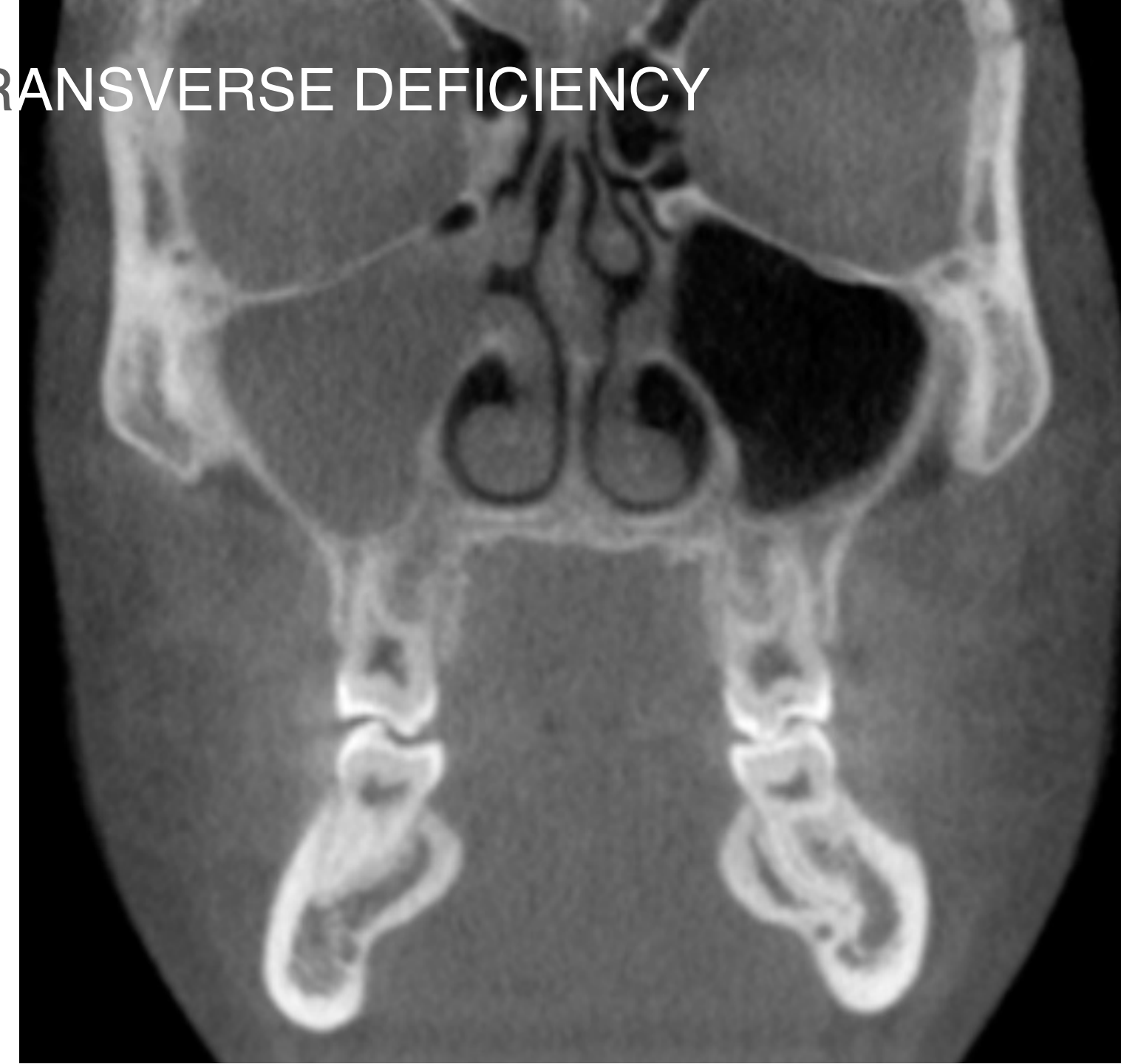




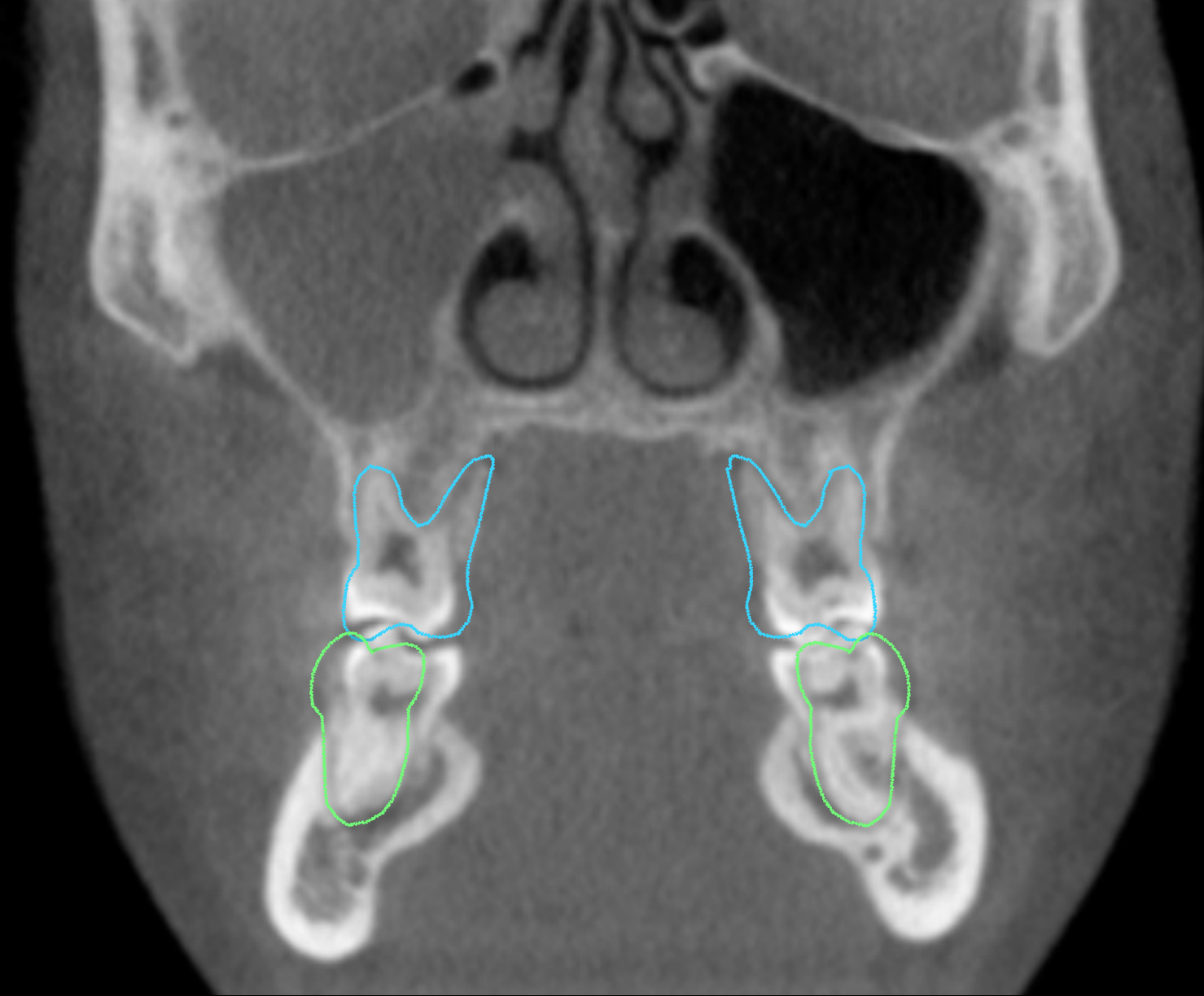




10 MM AP DEFICIENCY VERSUS 5 MM TRANSVERSE DEFICIENCY







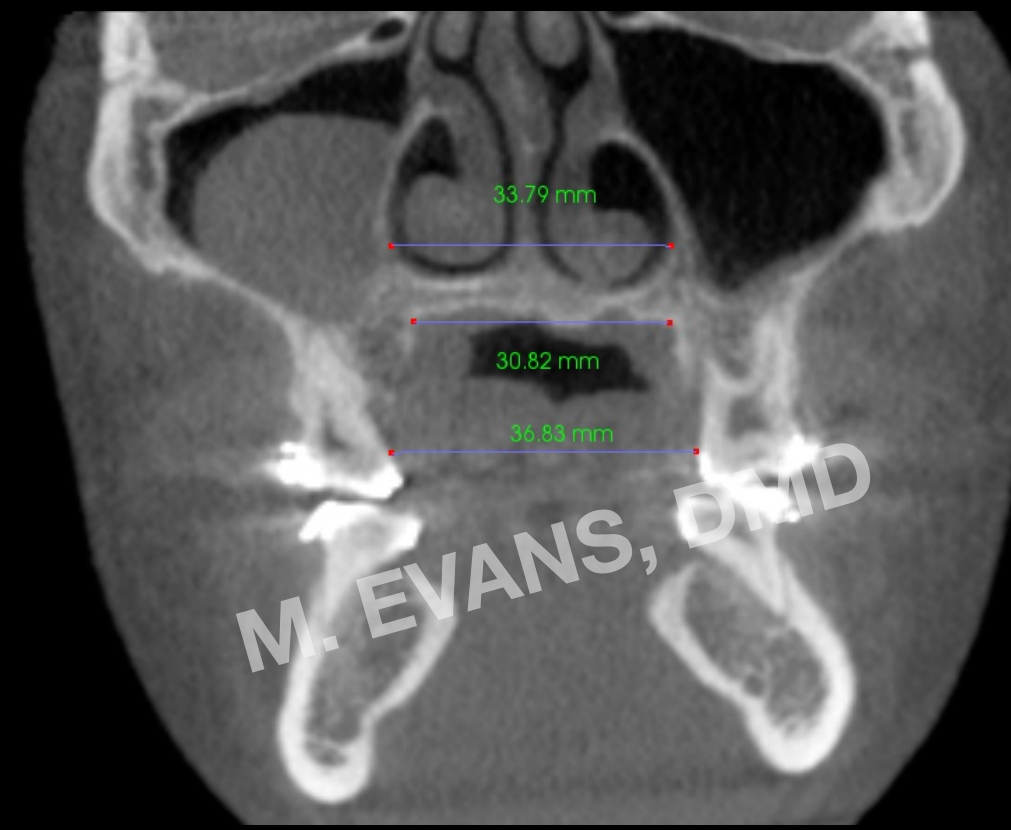
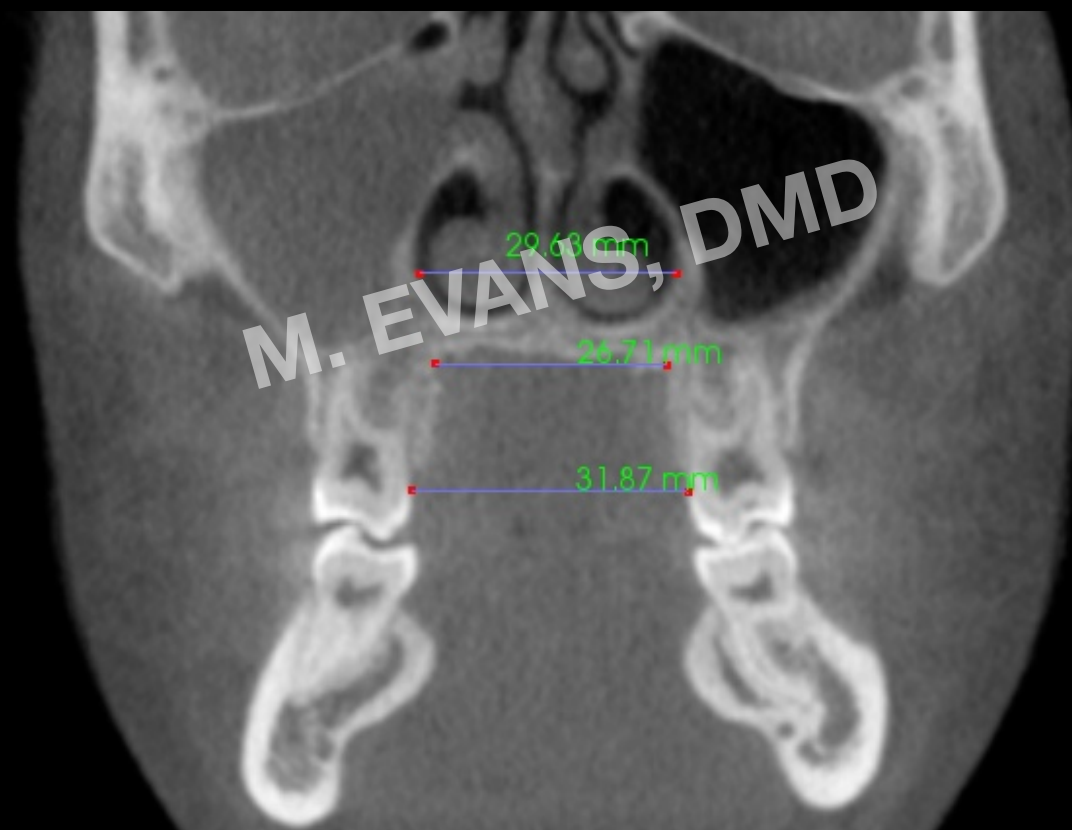
5 MM DISCREPANCY



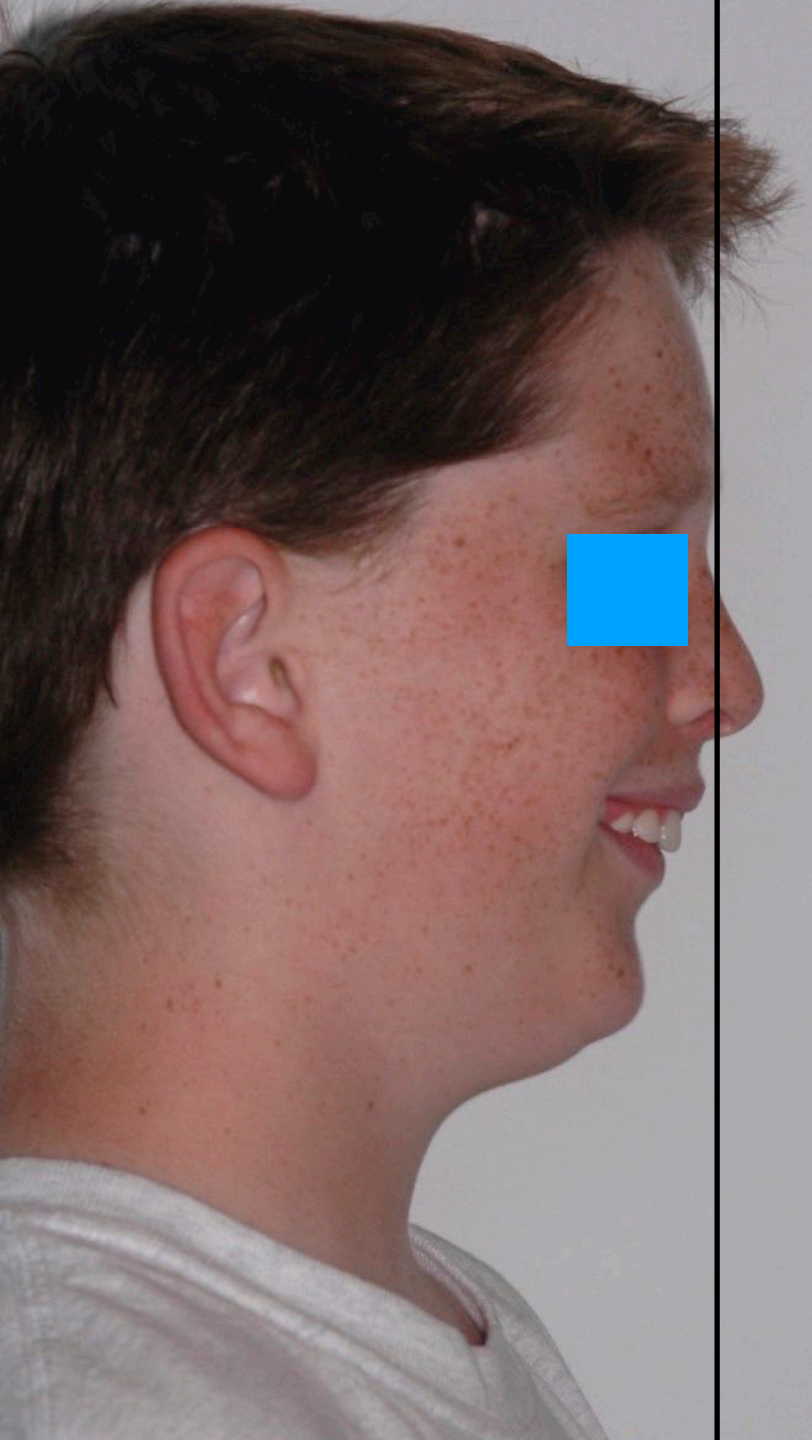




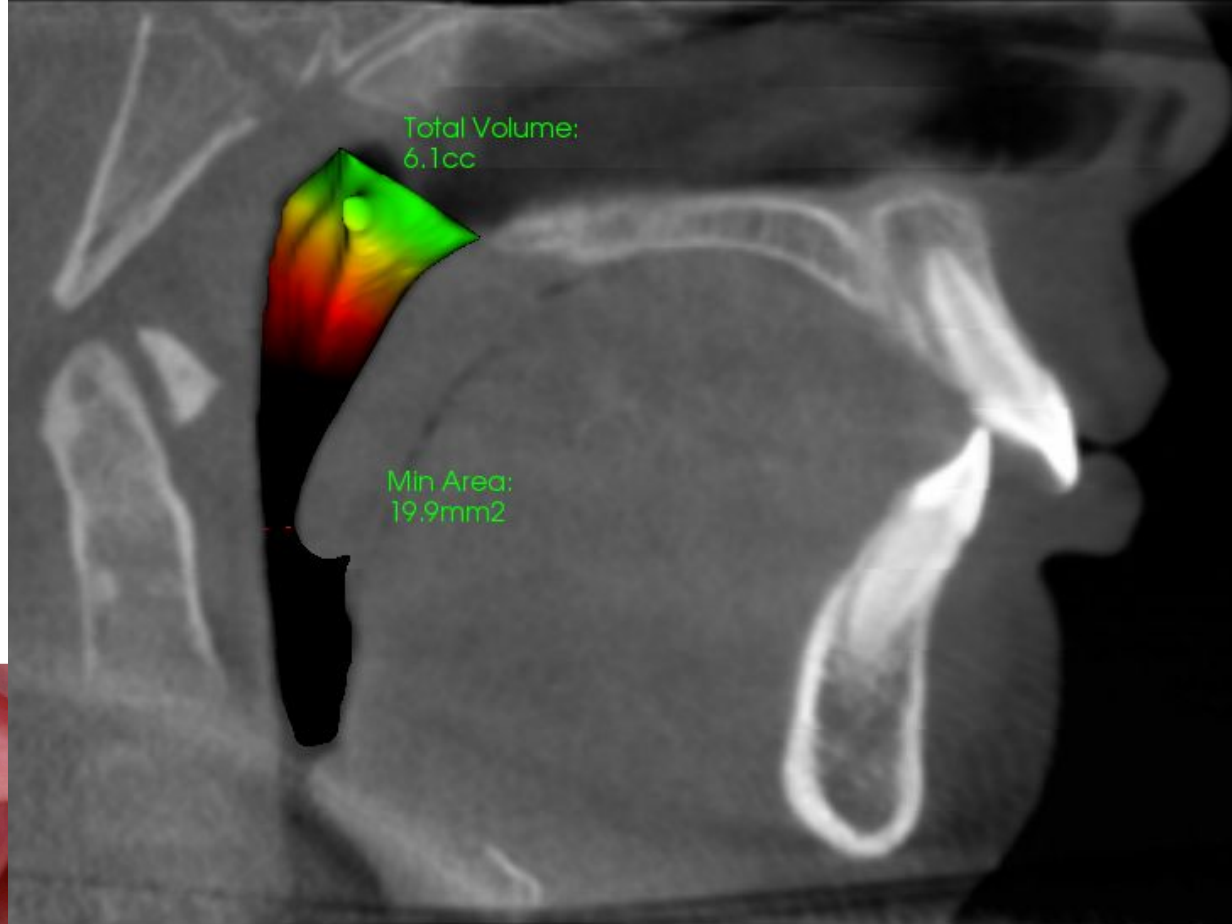
AFTER 4 MM OF SKELETAL TAD-ASSISTED  
EXPANSION AHI WENT FROM 16 TO 1







10 Y.O.  
MODERATE OSA  
HISTORY OF T&A SURGERY  
DAD HAS OSA



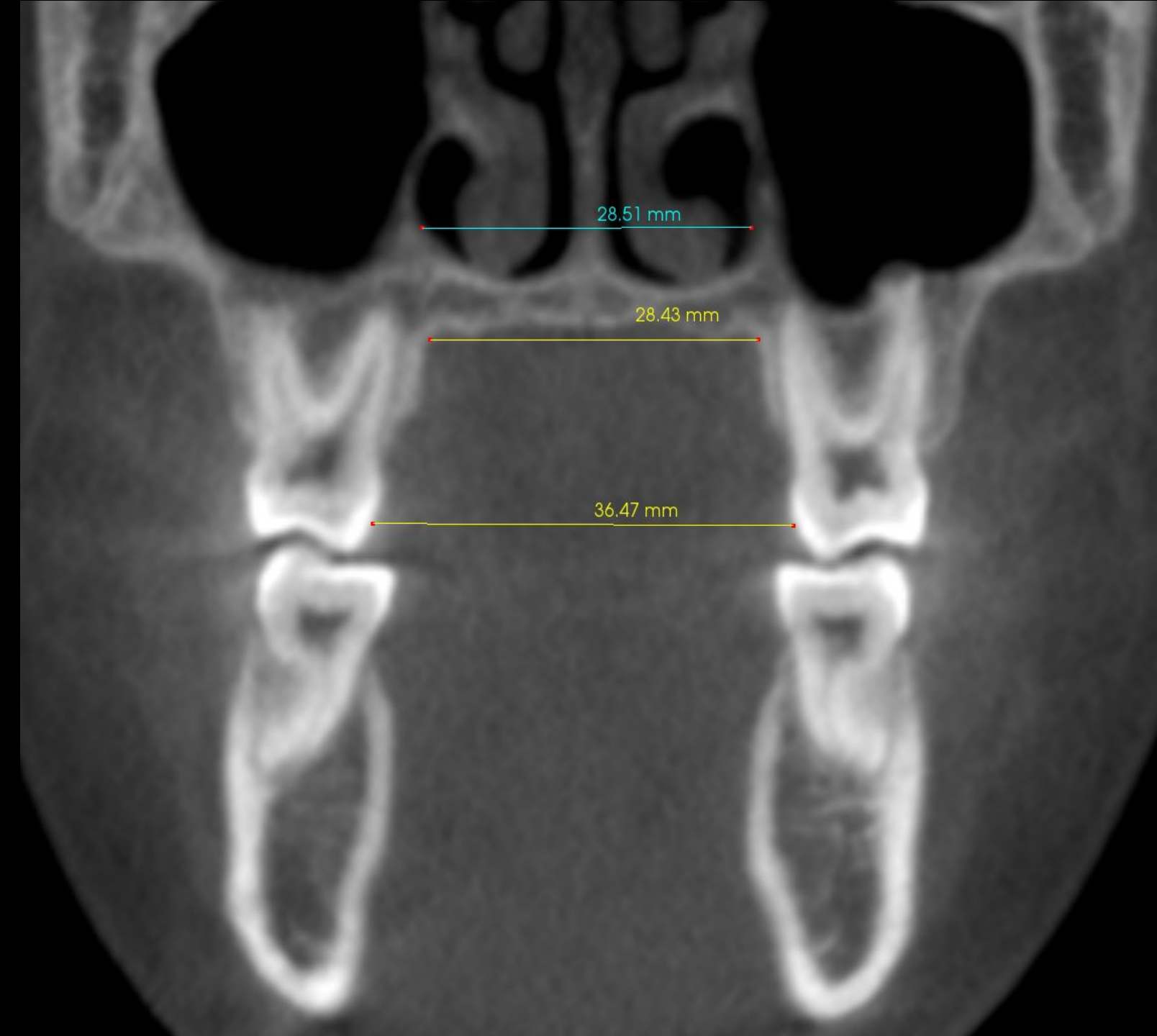




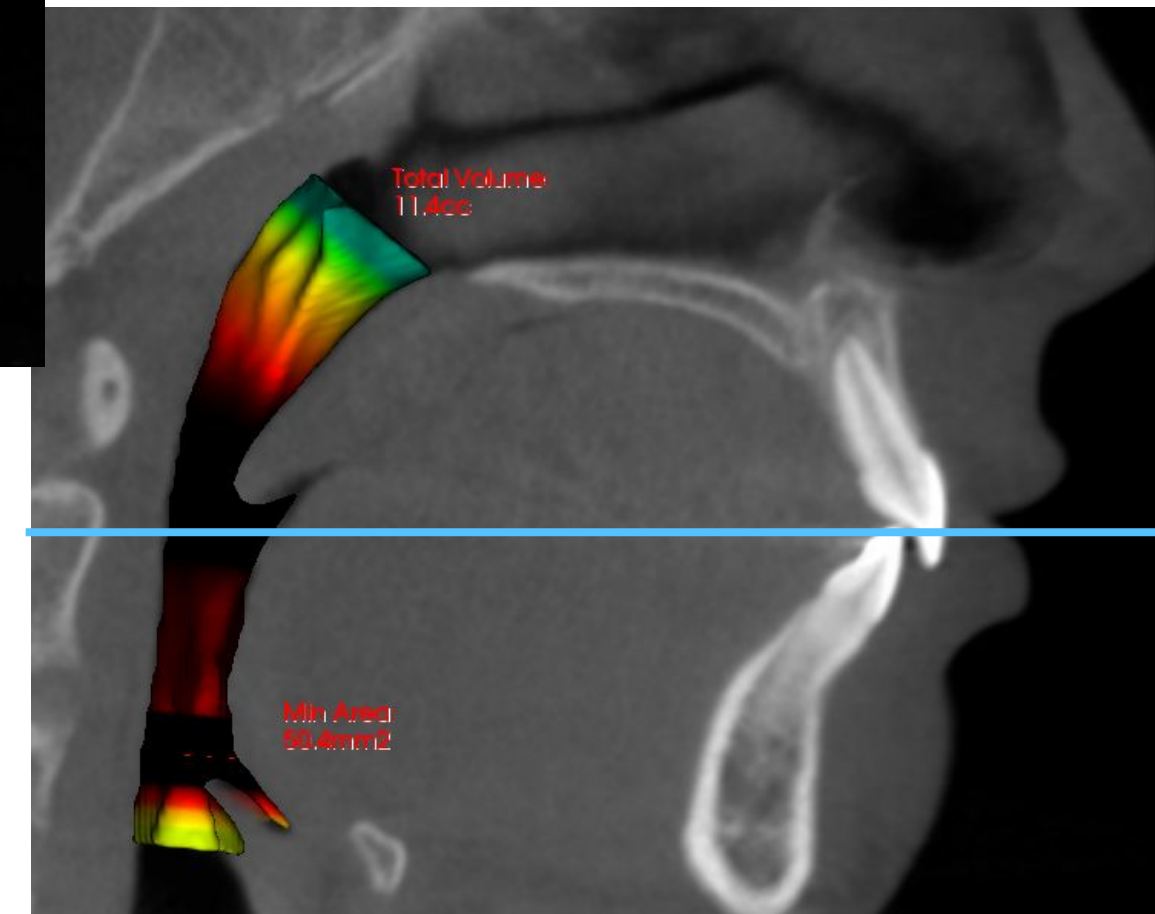
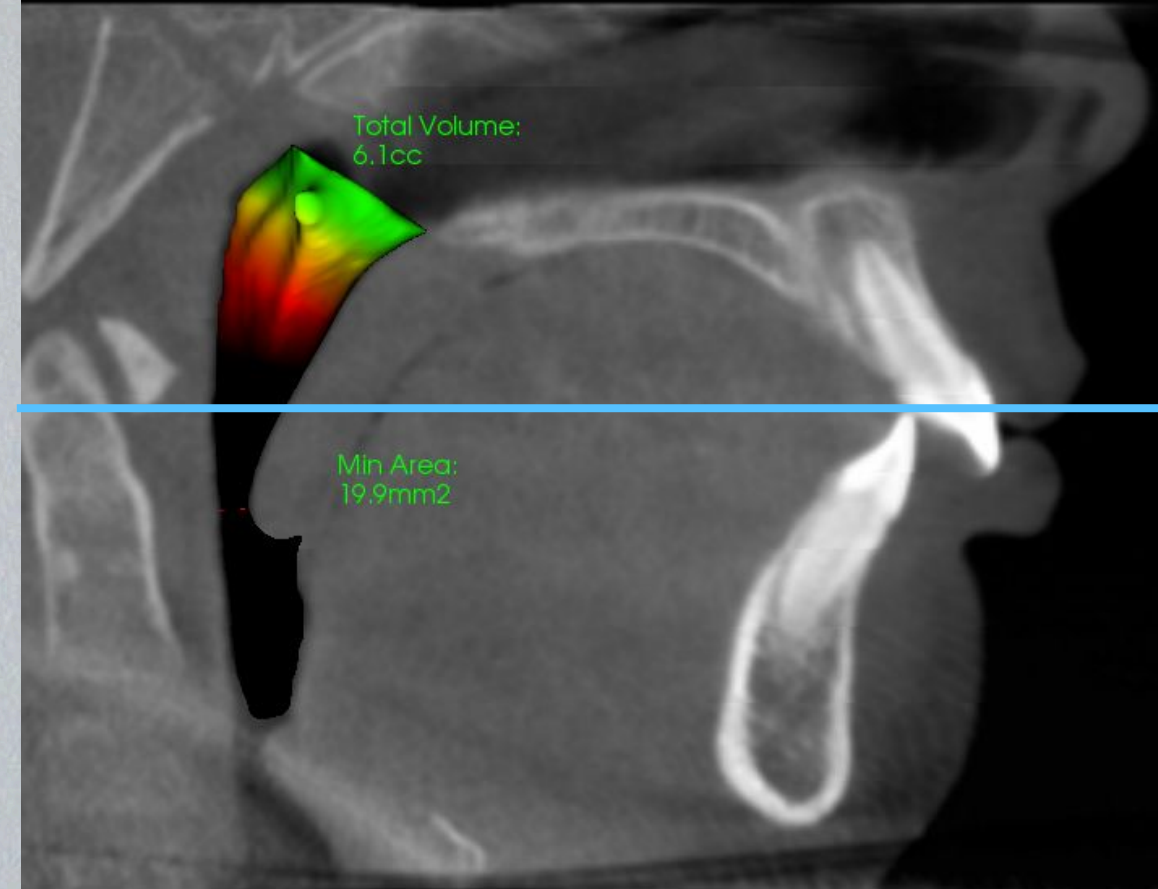
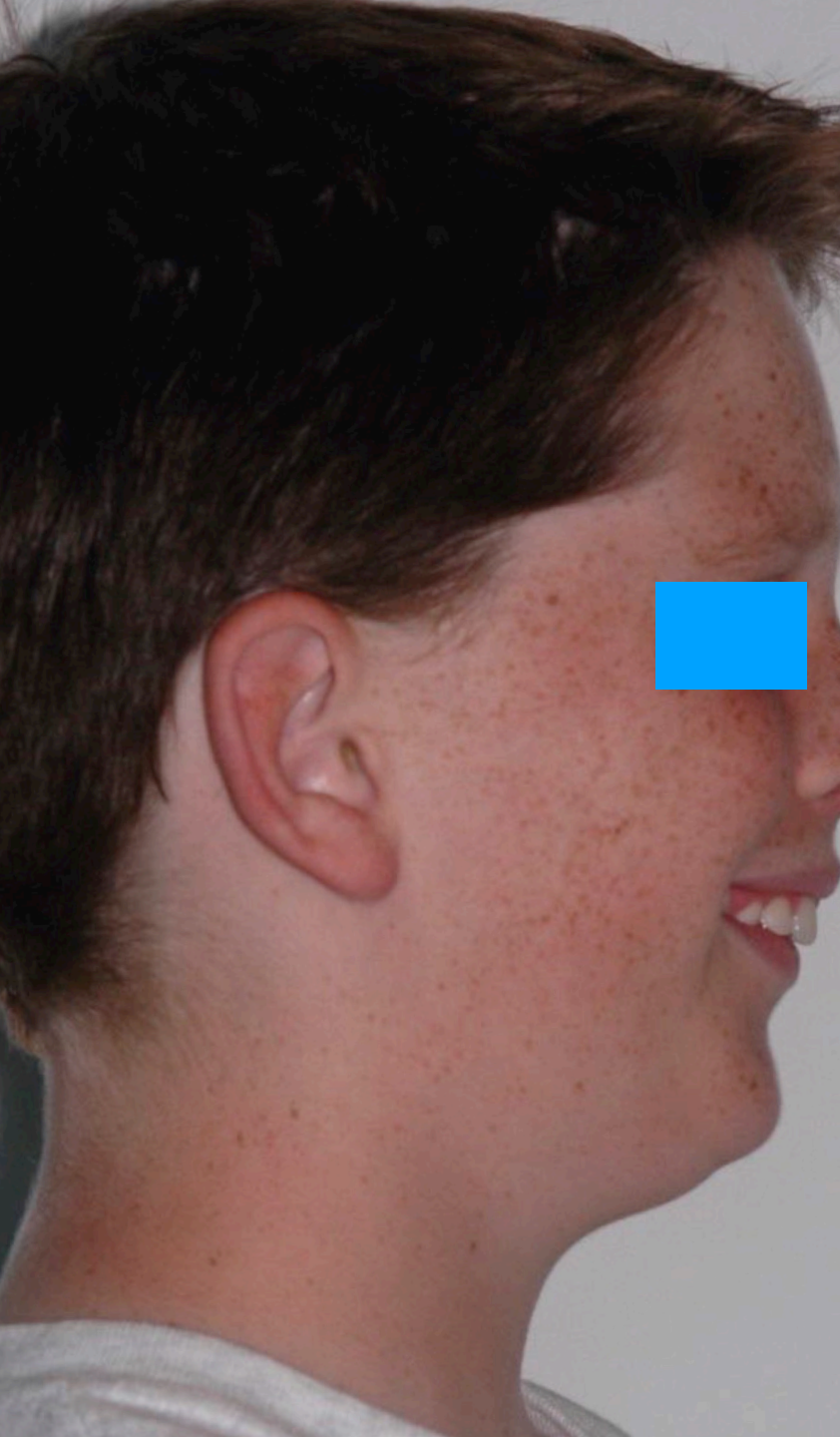




EXPANSION:  
4 MM AT NASAL FLOOR  
5.5 MM SKELETAL  
5.5 MM DENTAL



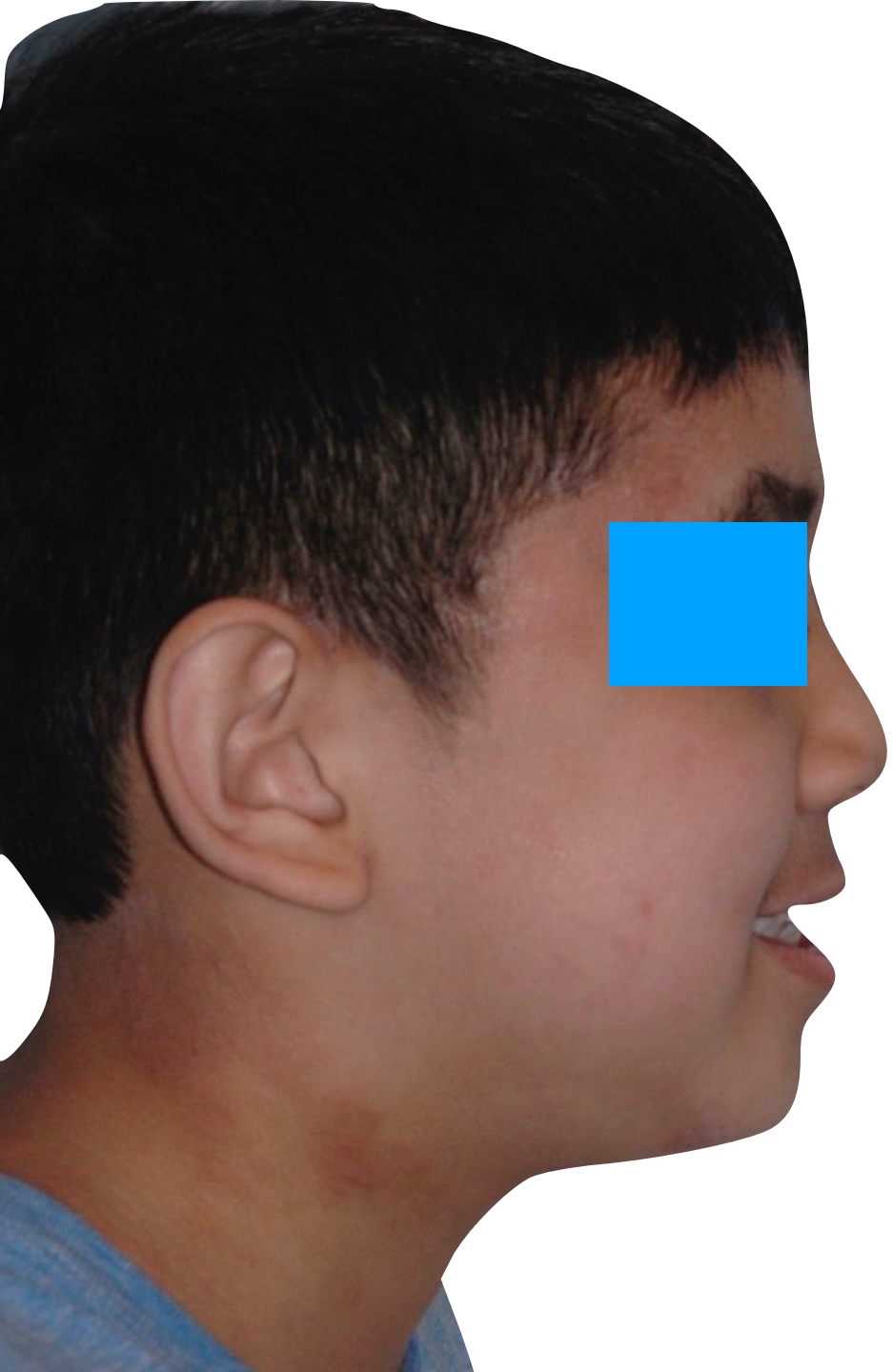












11 y.o.





ANATOMAGE  
20150220

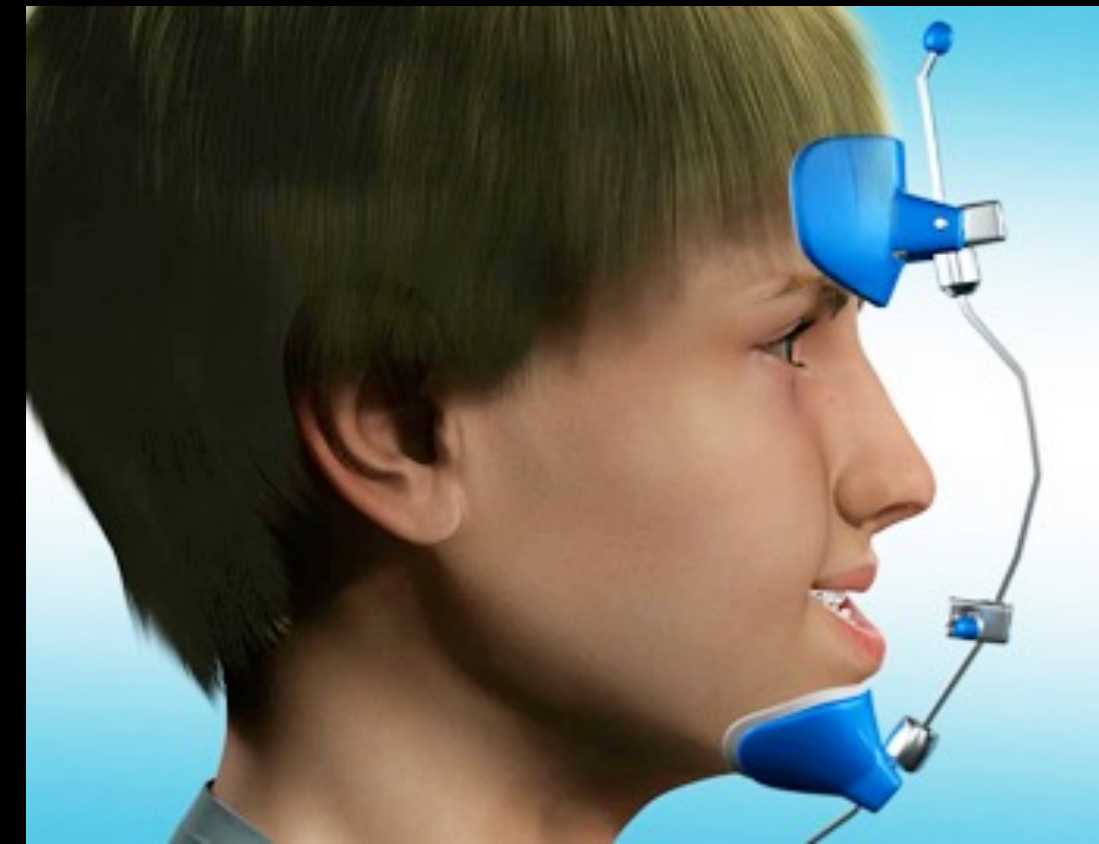
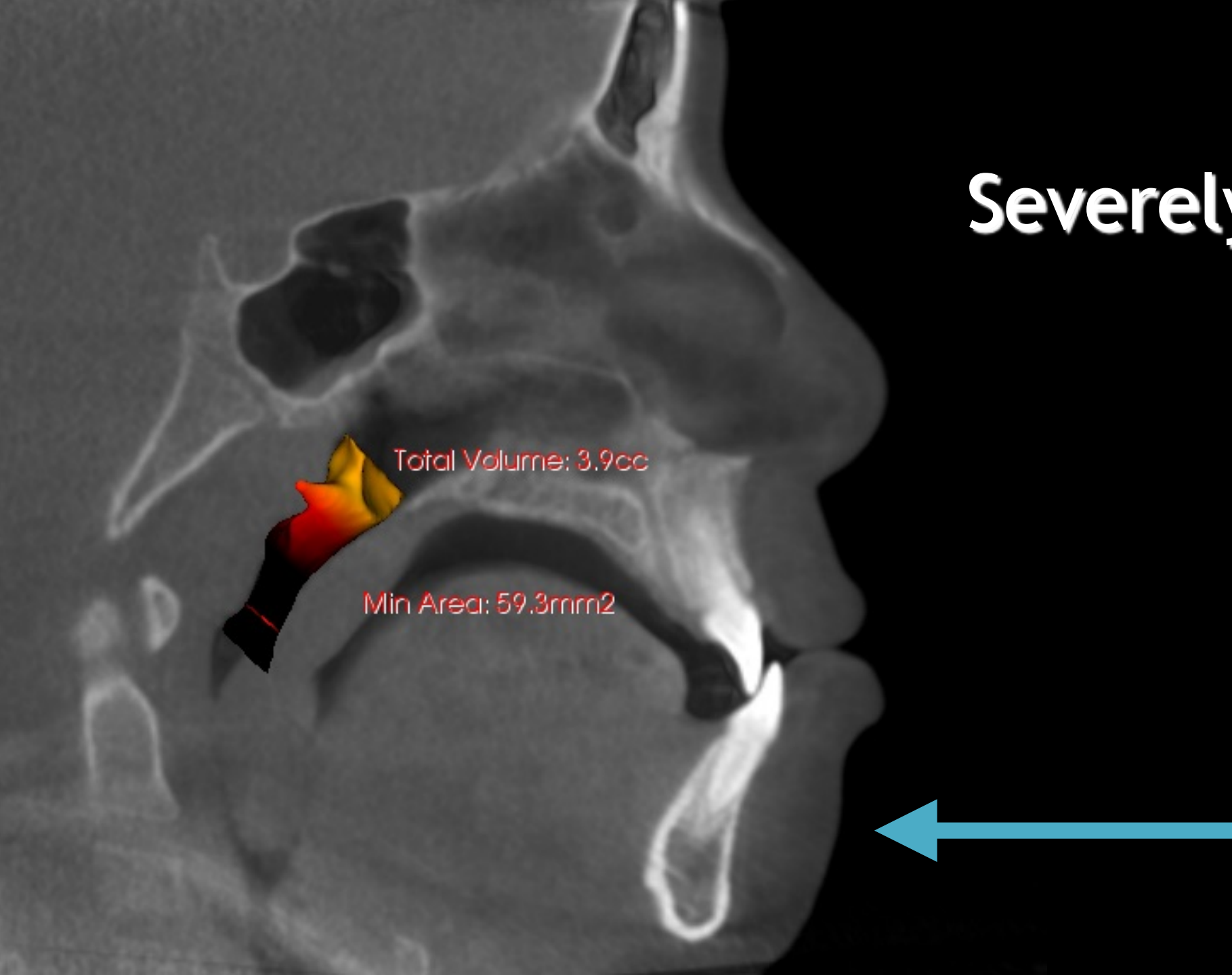
260  
(mm)





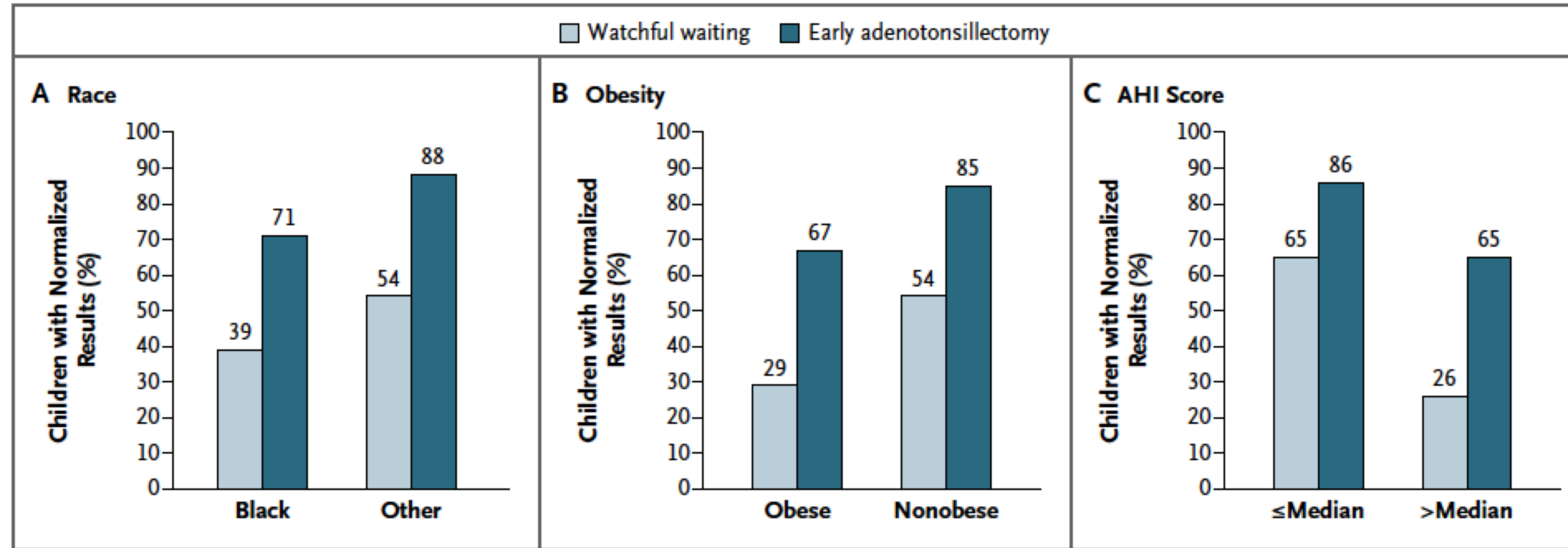


# Severely enlarged adenoids and tonsils





# CHAT STUDY: EFFECTIVENESS (PSG IMPROVEMENTS) OF T&A SURGERY FOR CHILDHOOD OSA





# Treatment Outcomes of Adenotonsillectomy for Children with Obstructive Sleep Apnea: A Prospective Longitudinal Study

Yu-Shu Huang, MD<sup>1,6</sup>; Christian Guilleminault, DM, MD, DBiol<sup>2,6</sup>; Li-Ang Lee, MD<sup>3</sup>; Cheng-Hui Lin, MD<sup>4</sup>; Fan-Ming Hwang, PhD<sup>5</sup>

<sup>1</sup>*Department of Child Psychiatry and Sleep Center, Chang Gung Memorial Hospital and College of Medicine, Taoyuan, Taiwan;* <sup>2</sup>*Stanford University Sleep Medicine Division, Stanford, CA;* <sup>3</sup>*Department of Otolaryngology and Sleep Center, Chang Gung Memorial Hospital and College of Medicine, Taoyuan, Taiwan;* <sup>4</sup>*Department of Cranio-Facial Center and Sleep Center, Chang Gung Memorial Hospital and College of Medicine, Taoyuan, Taiwan;* <sup>5</sup>*Department of Education, National Chia-Yi University, Chiayi, Taiwan;* <sup>6</sup>*Department of Clinical Psychology College of Medicine, FU JEN Catholic University, Taipei, Taiwan*

**Objective:** To evaluate the efficacy of adenotonsillectomy (AT) in the treatment of children with obstructive sleep apnea (OSA) in a 3-y prospective, longitudinal study with analysis of risk factors of recurrence of OSA.

**Study Design:** An investigation of children (6 to 12 y old) with OSA documented at entry and followed posttreatment at 6, 12, 24, and 36 mo with examination, questionnaires, and polysomnography.

Multivariate generalized linear modeling and hierarchical linear models analysis were used to determine contributors to suboptimal long-term resolution of OSA, and Generalized Linear Models were used for analysis of risk factors of recurrence.

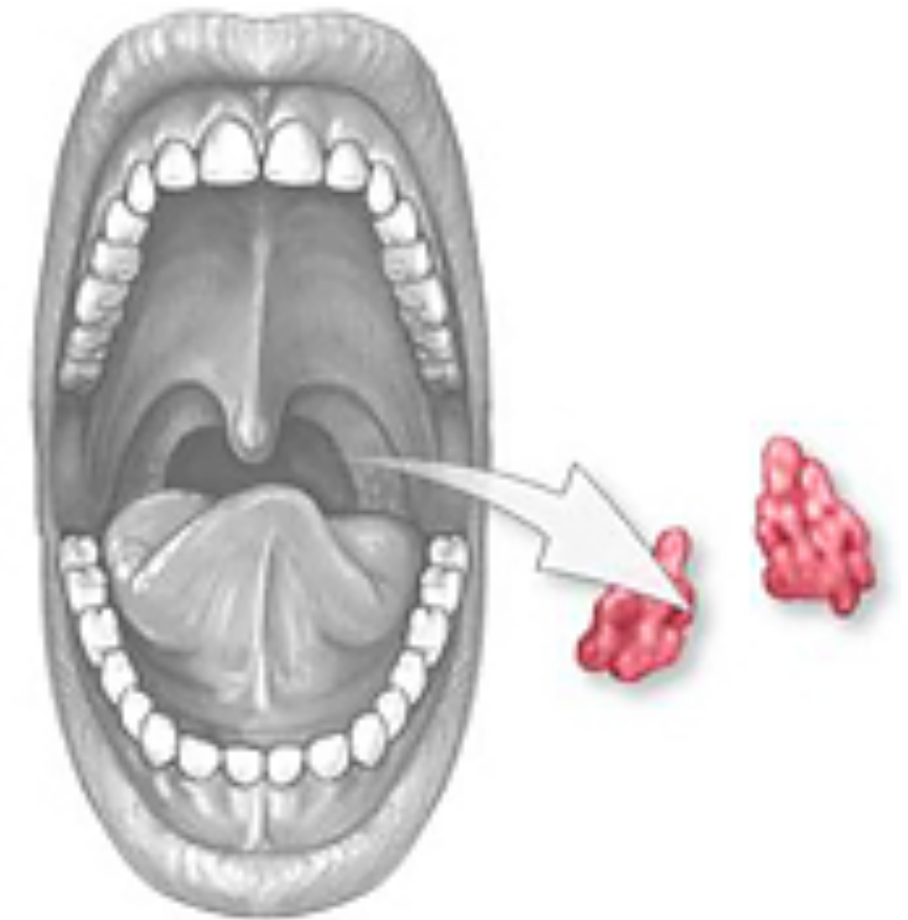
**Results:** Of the 135 children, 88 terminated the study at 36 months post-AT. These 88 children (boys = 72, mean age =  $8.9 \pm 2.7$  y versus boys  $8.9 \pm 2.04$  y, girls:  $8.8 \pm 2.07$  y; body mass index [BMI] =  $19.5 \pm 4.6$  kg/m<sup>2</sup>) had a preoperative mean apnea-hypopnea index (AHI<sub>0</sub>) of  $13.54 \pm 7.23$  and a mean postoperative AHI at 6 mo (AHI<sub>6</sub>) of  $3.47 \pm 8.41$  events/h (with AHI<sub>6</sub> > 1 = 53.4% of 88 children). A progressive increase in AHI was noted with a mean AHI<sub>36</sub> =  $6.48 \pm 5.57$  events/h and AHI<sub>36</sub> > 1 = 68% of the studied group. Change in AHI was associated with changes in the OSA-18 questionnaire.

The residual pediatric OSA after AT was significantly associated with BMI, AHI, enuresis, and allergic rhinitis before surgery. From 6 to 36 mo after AT, recurrence of pediatric OSA was significantly associated with enuresis, age (for the 24- to 36-mo period), postsurgery AHI<sub>6</sub> (severity), and the rate of change in BMI and body weight.

**Conclusions:** Adenotonsillectomy leads to significant improvement in apnea-hypopnea index, though generally with incomplete resolution, but worsening over time was observed in 68% of our cases.

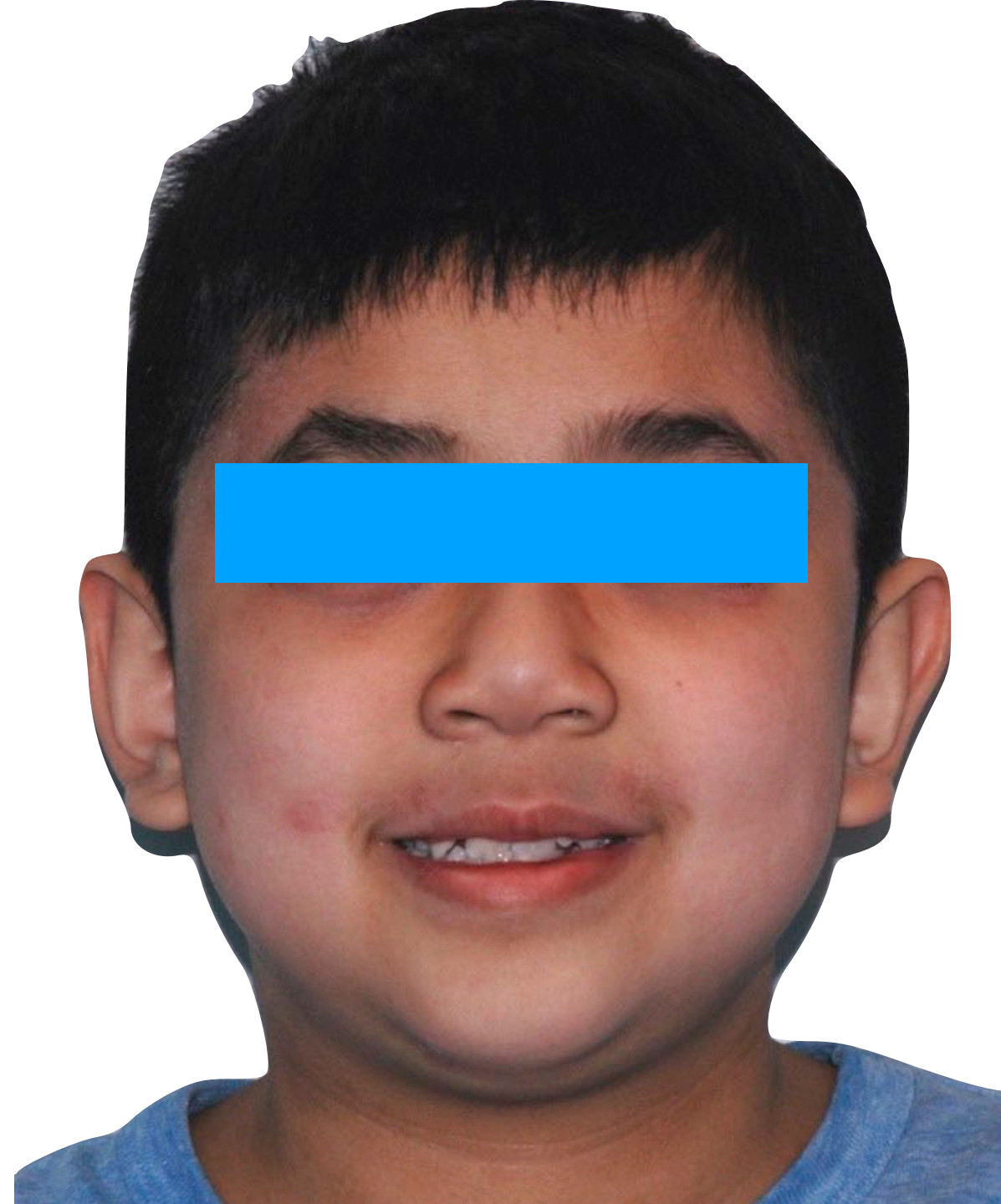
**Keywords:** adenotonsillectomy, comorbidity, obstructive sleep apnea, polysomnography, treatment outcomes

**Citation:** Huang YS; Guilleminault C; Lee LA; Lin CH; Hwang FM. Treatment outcomes of adenotonsillectomy for children with obstructive sleep apnea: a prospective longitudinal study. *SLEEP* 2014;37(1):71-76.



**Conclusions:** Adenotonsillectomy leads to significant improvement in apnea-hypopnea index, though generally with incomplete resolution, but a worsening over time was observed in 68% of our cases.

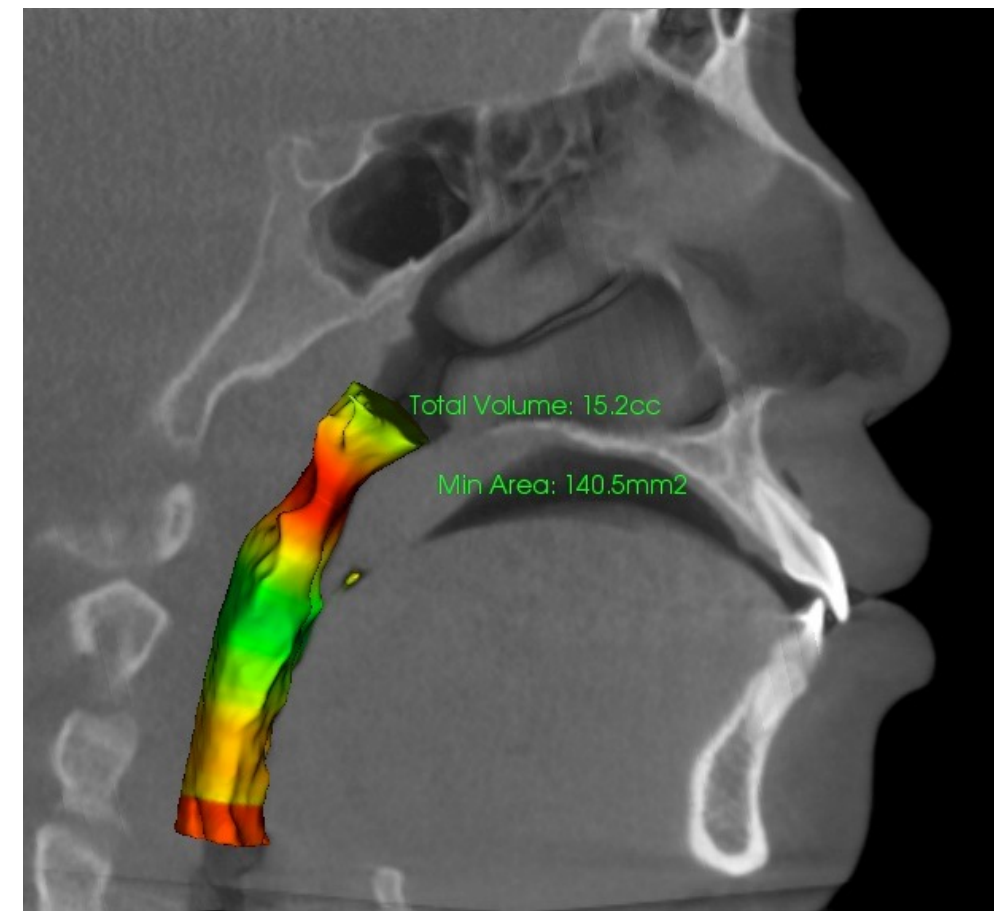
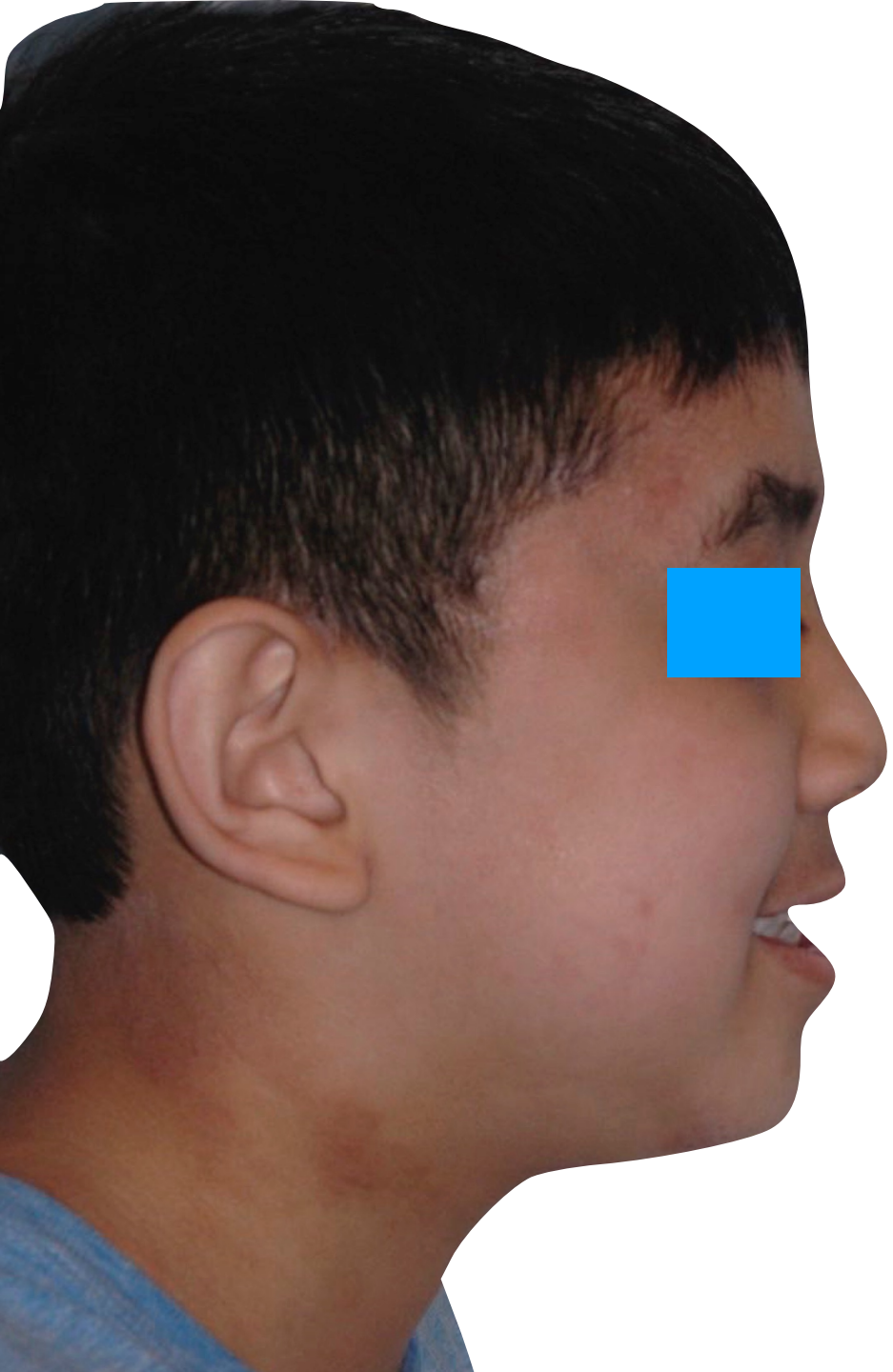












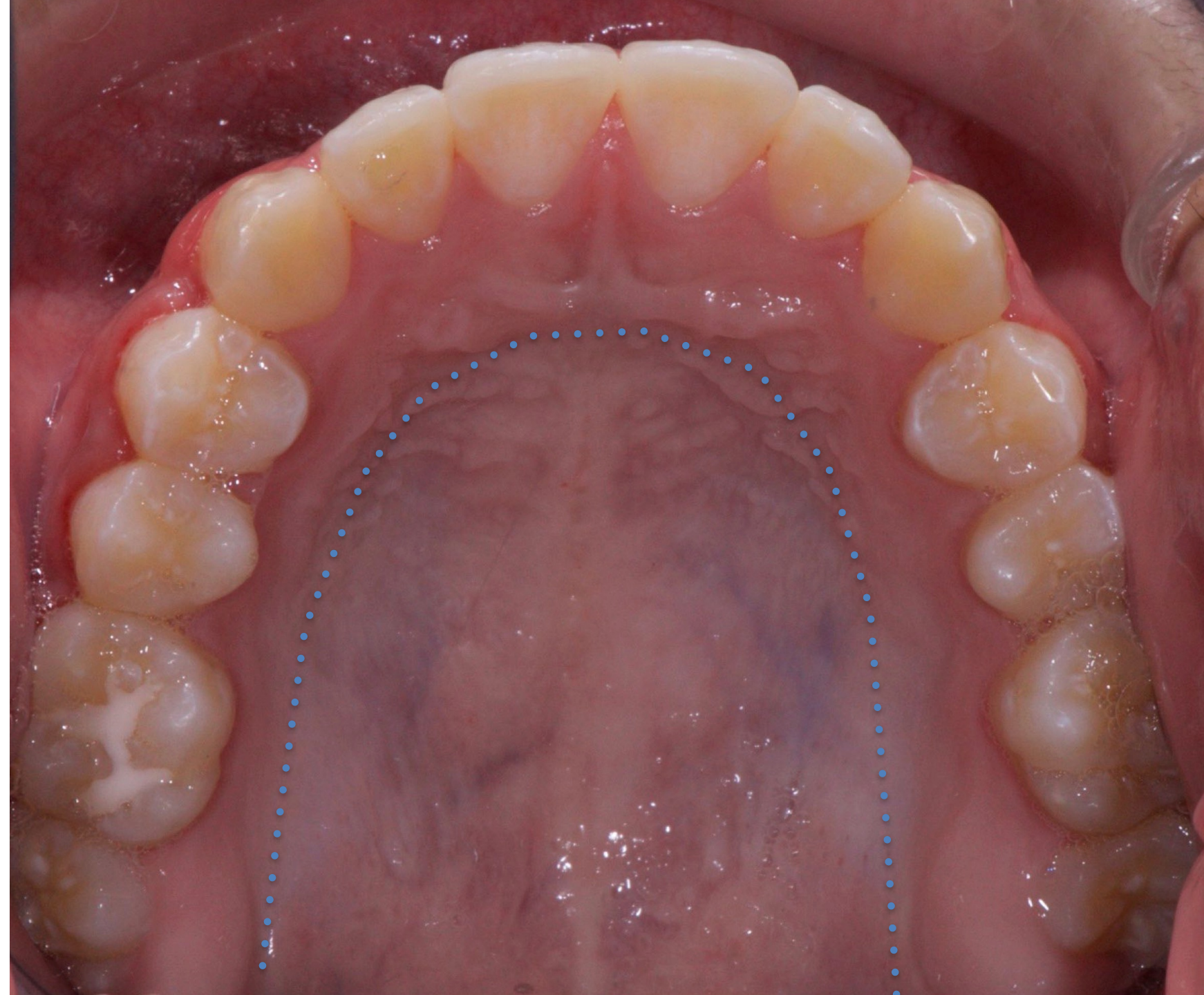
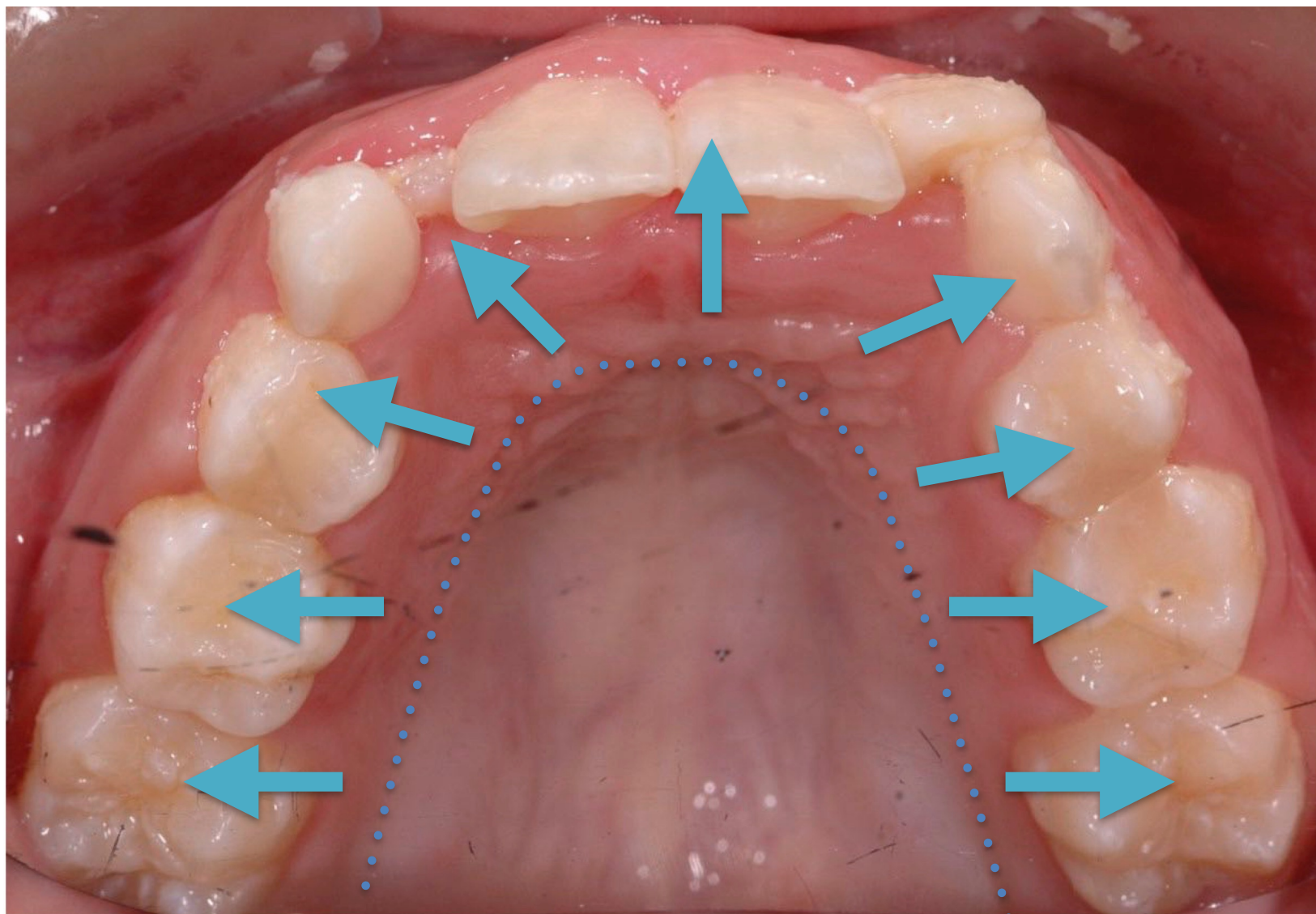




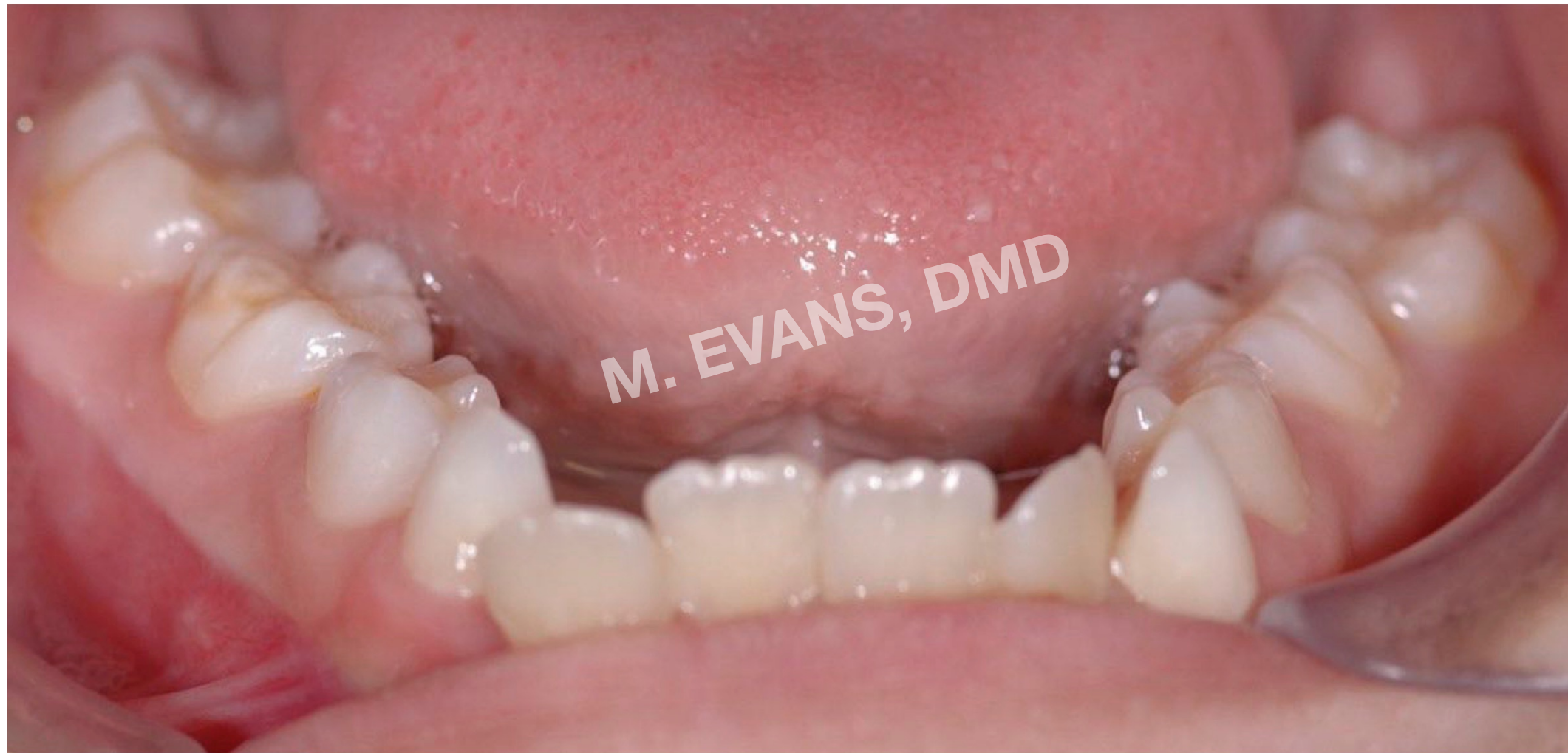




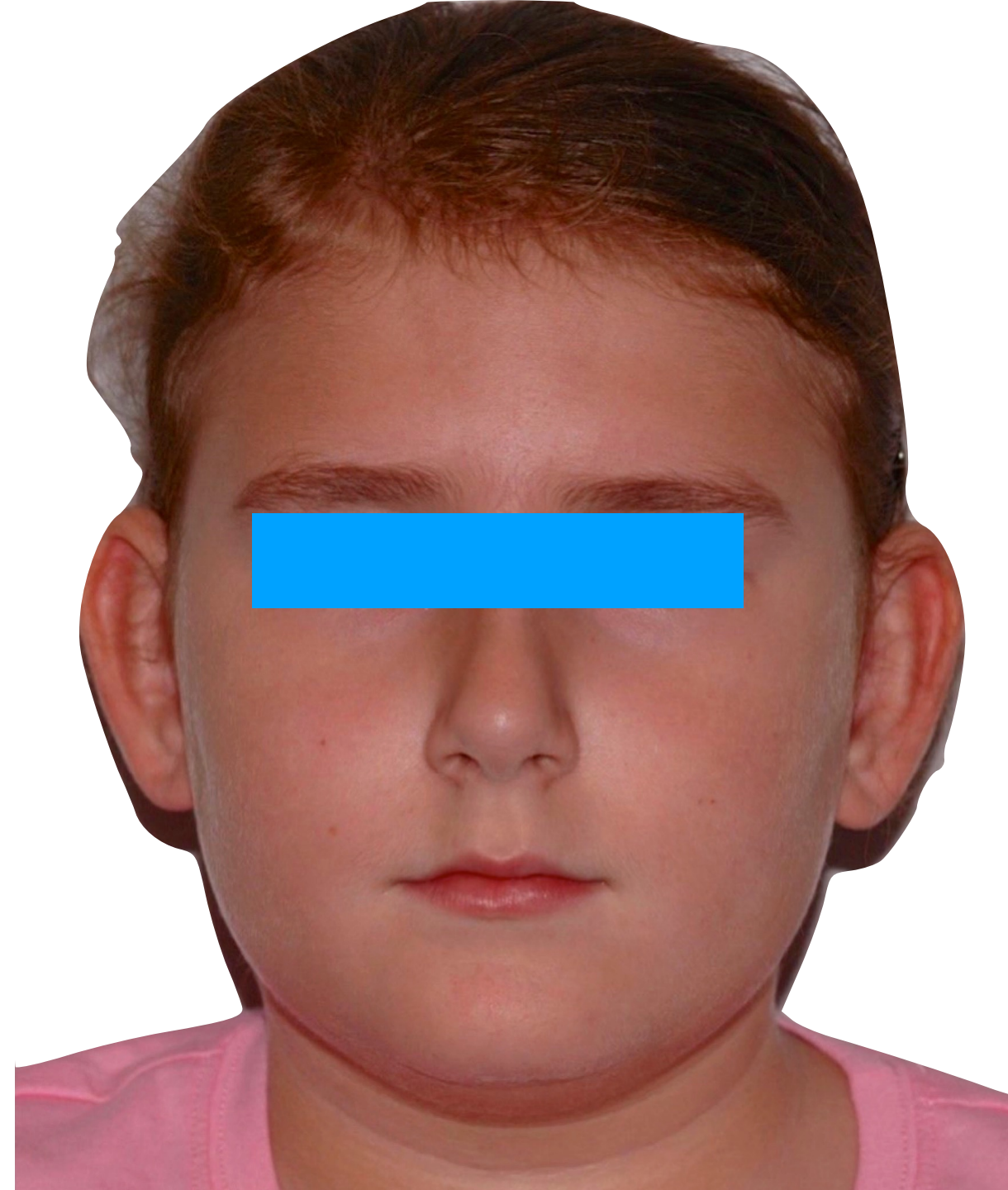
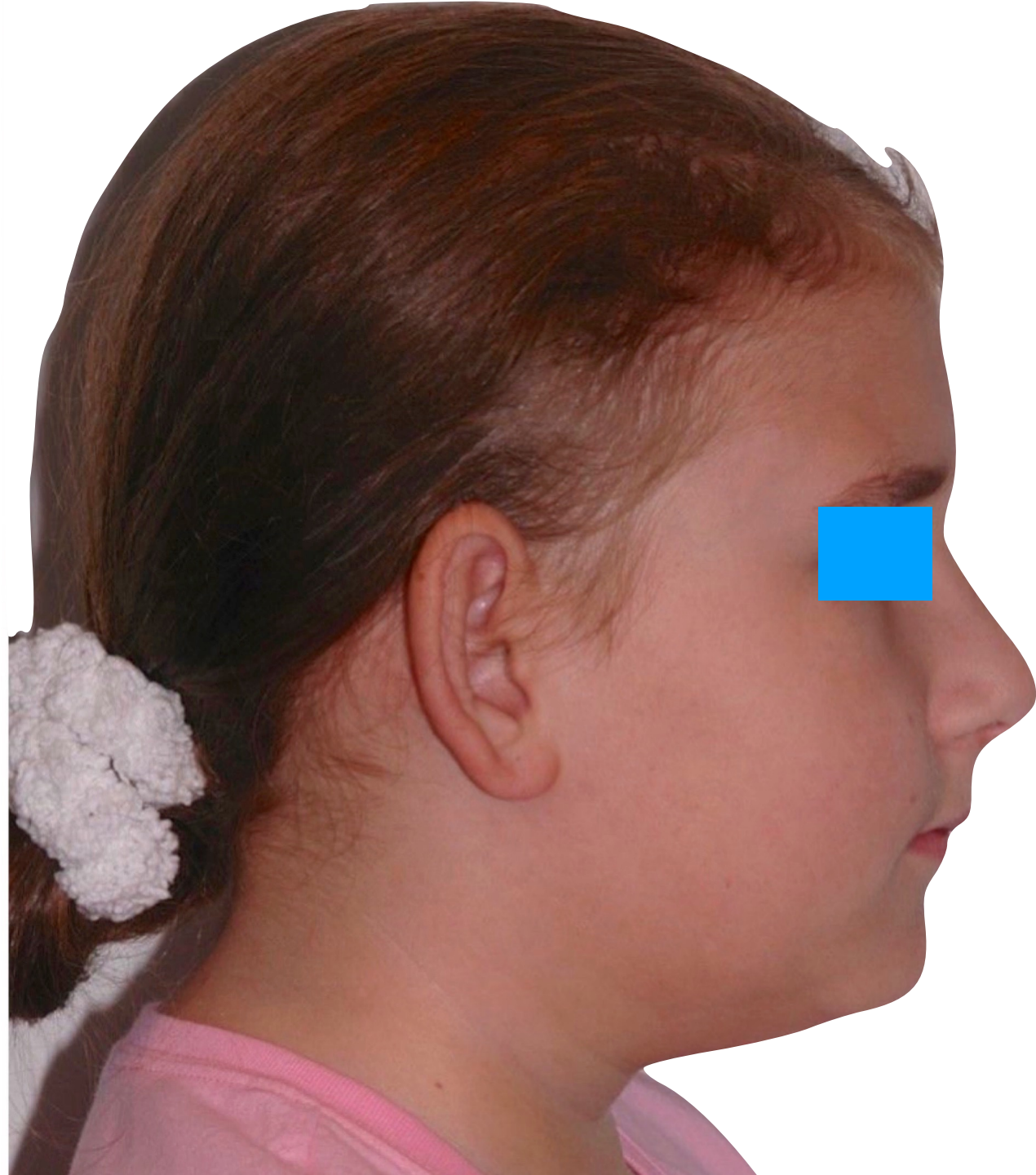




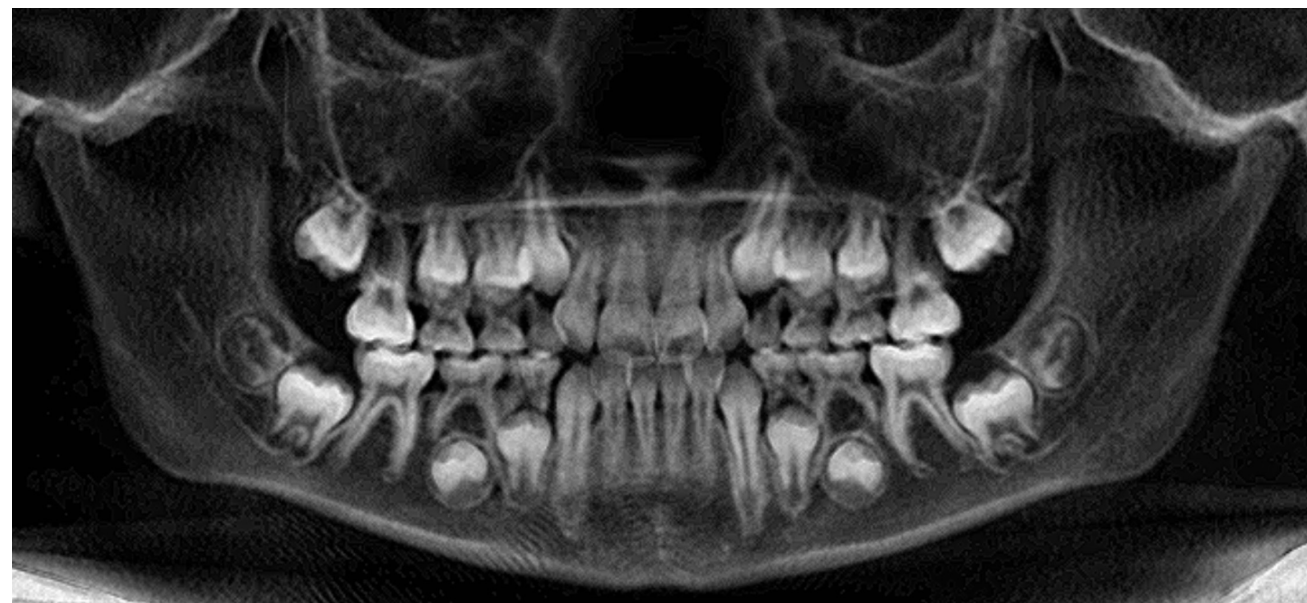




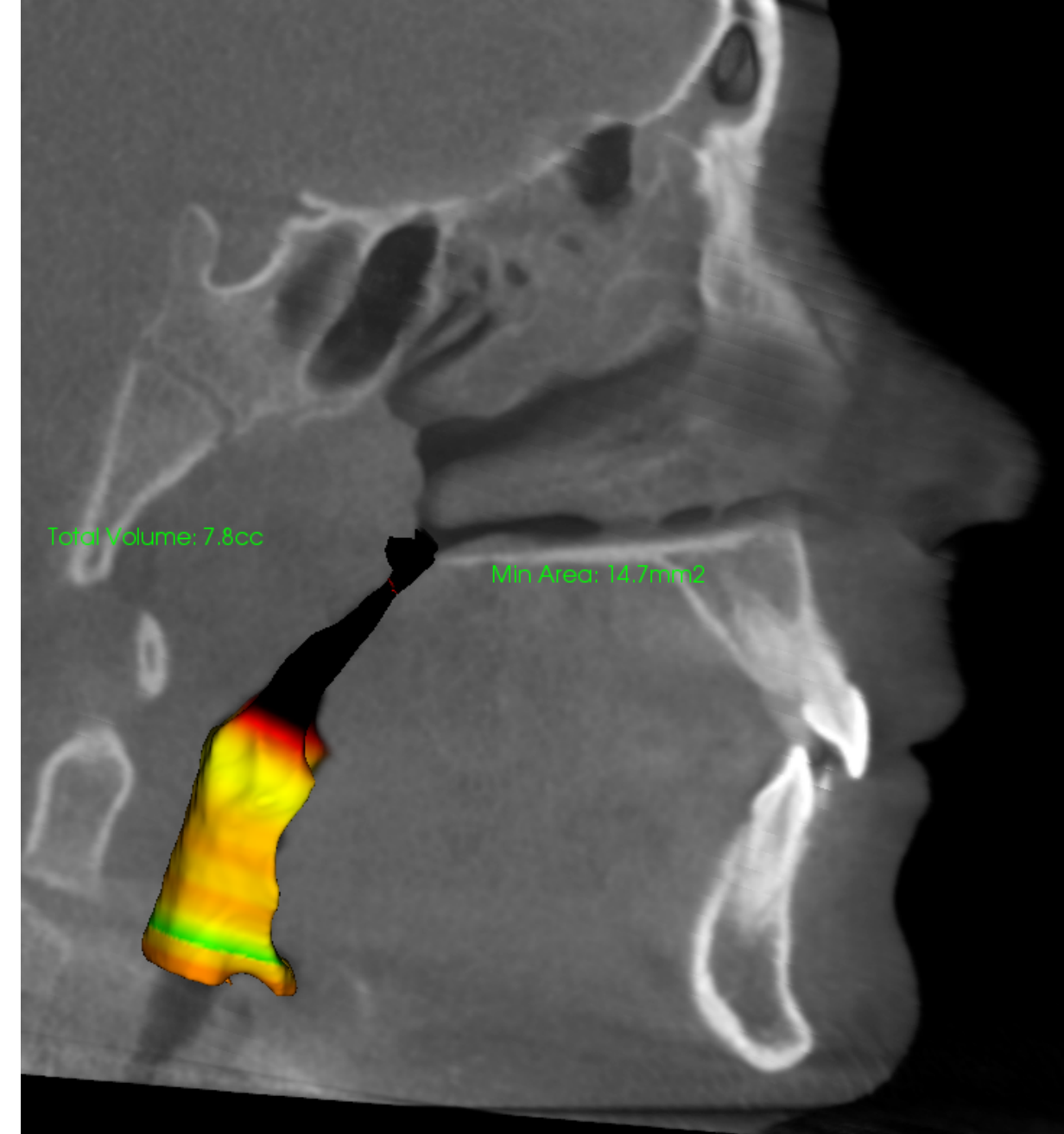




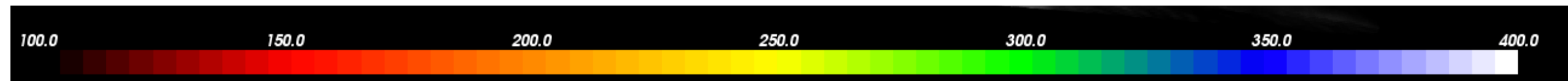
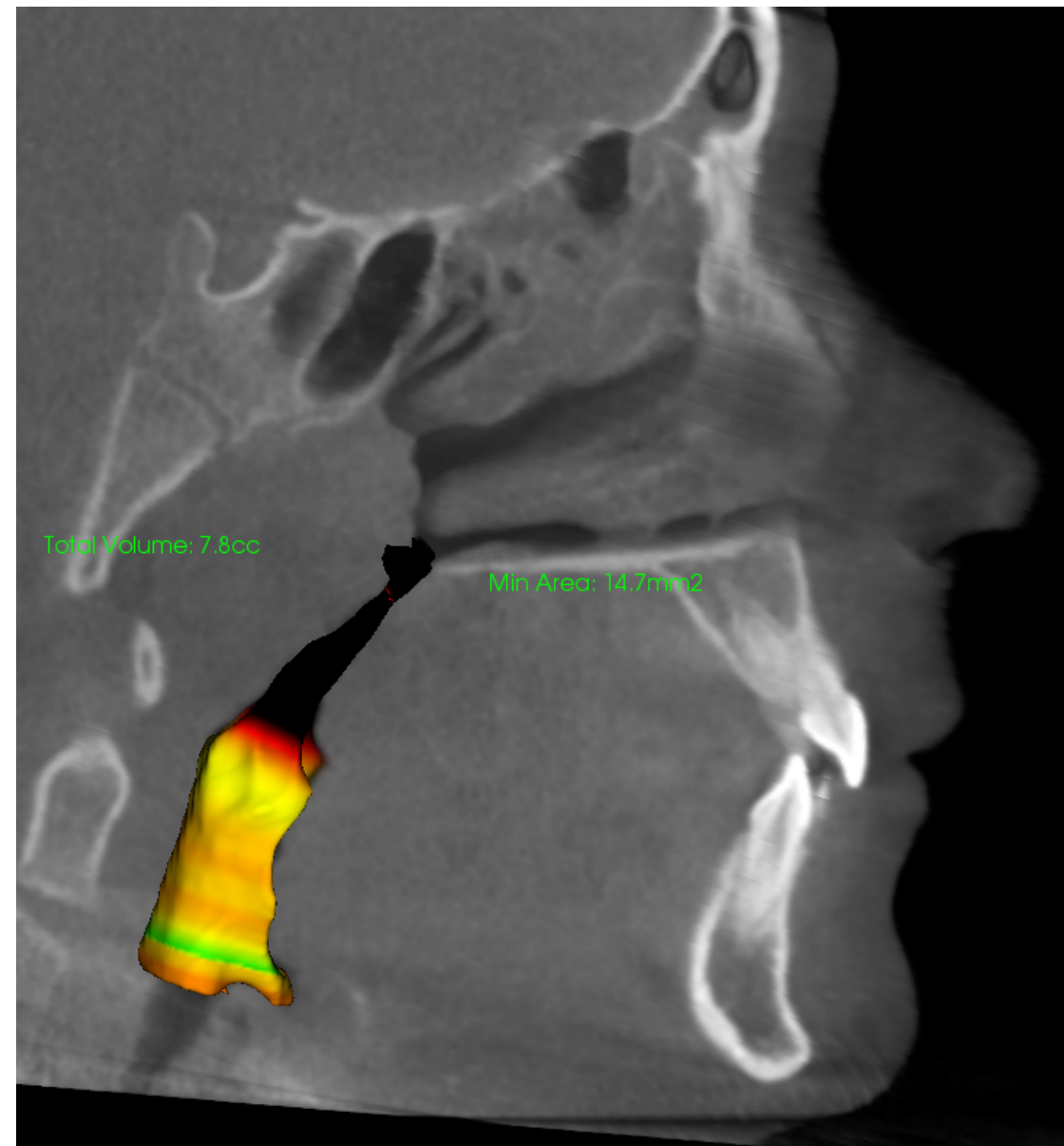




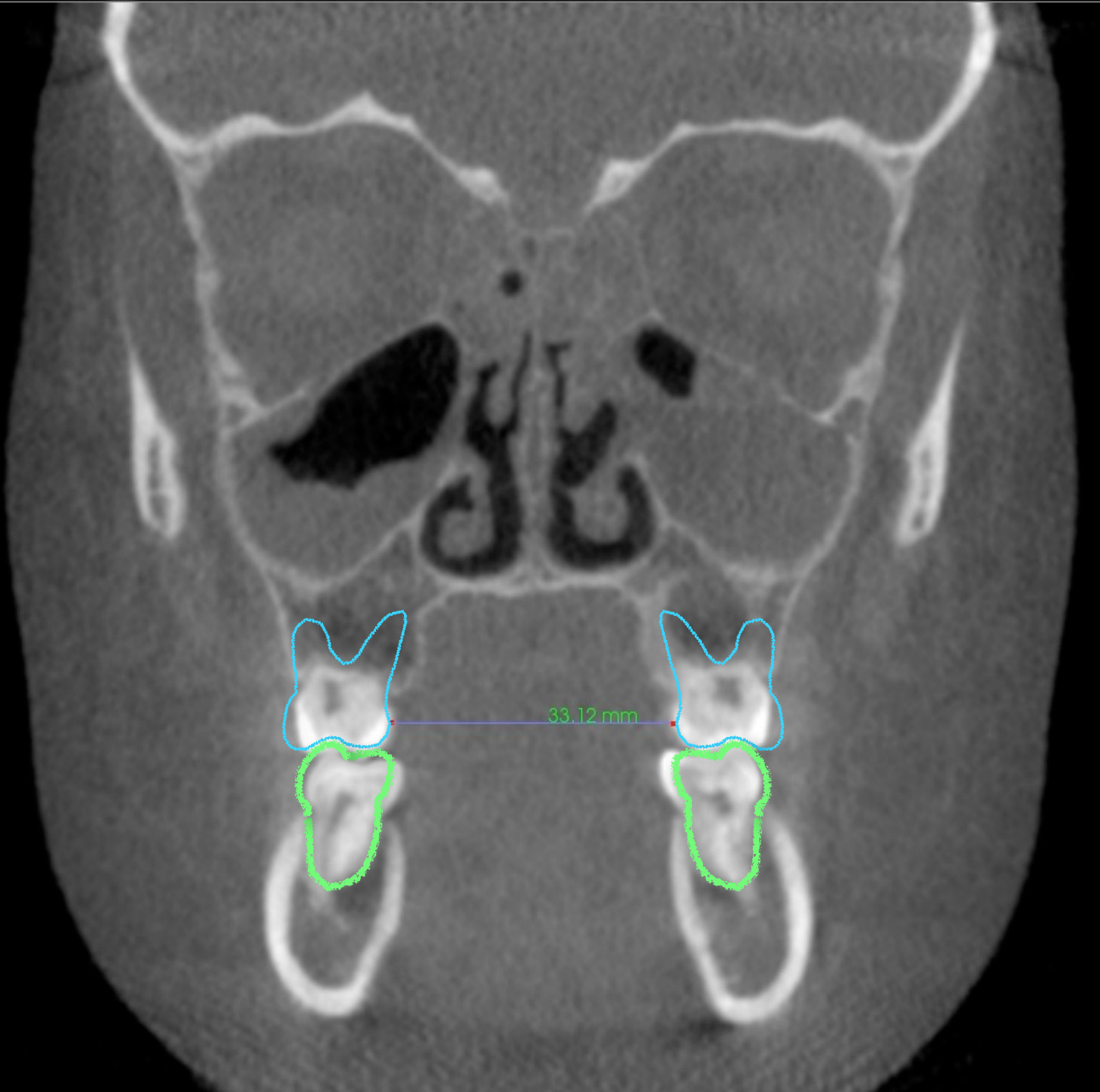






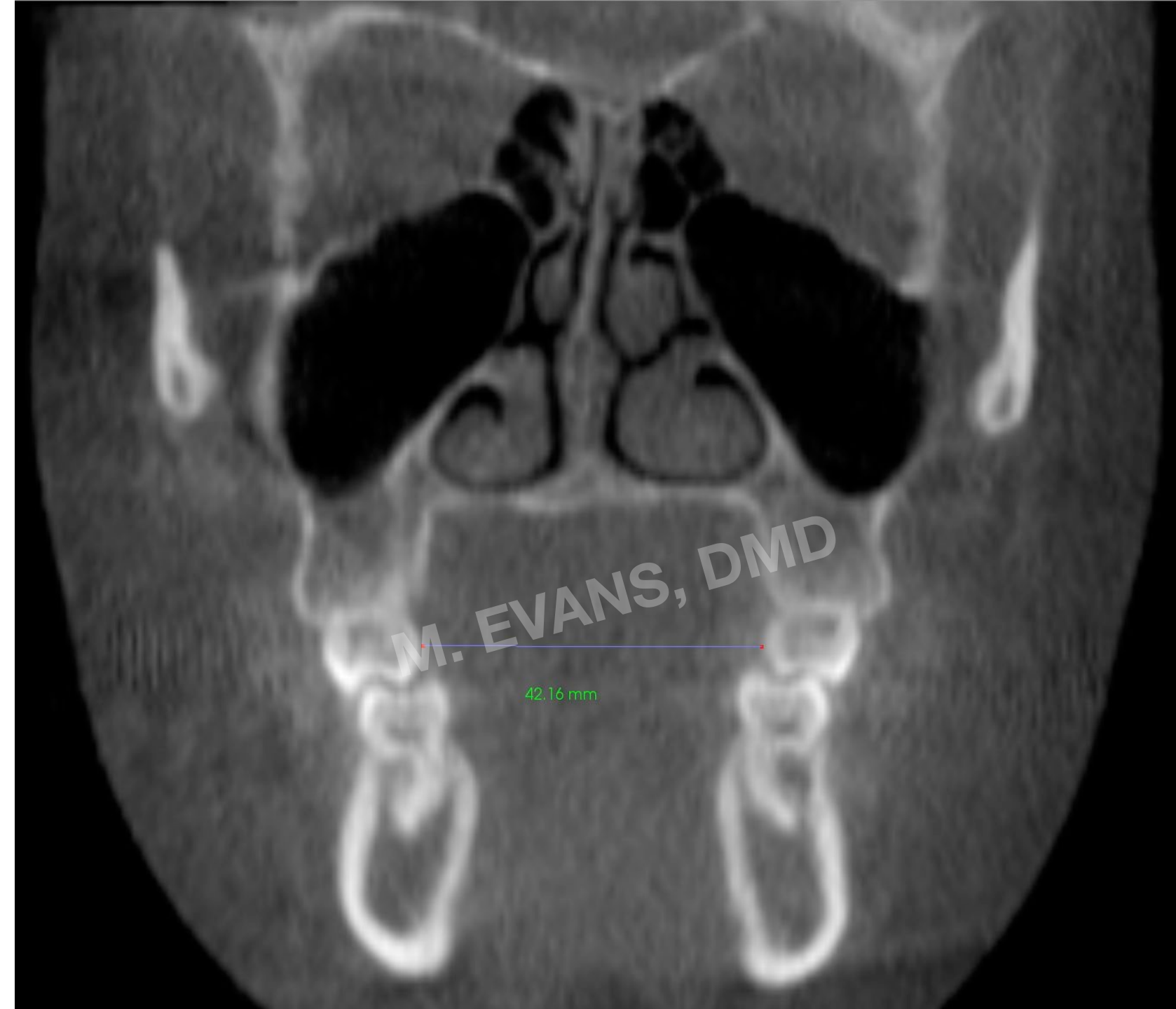
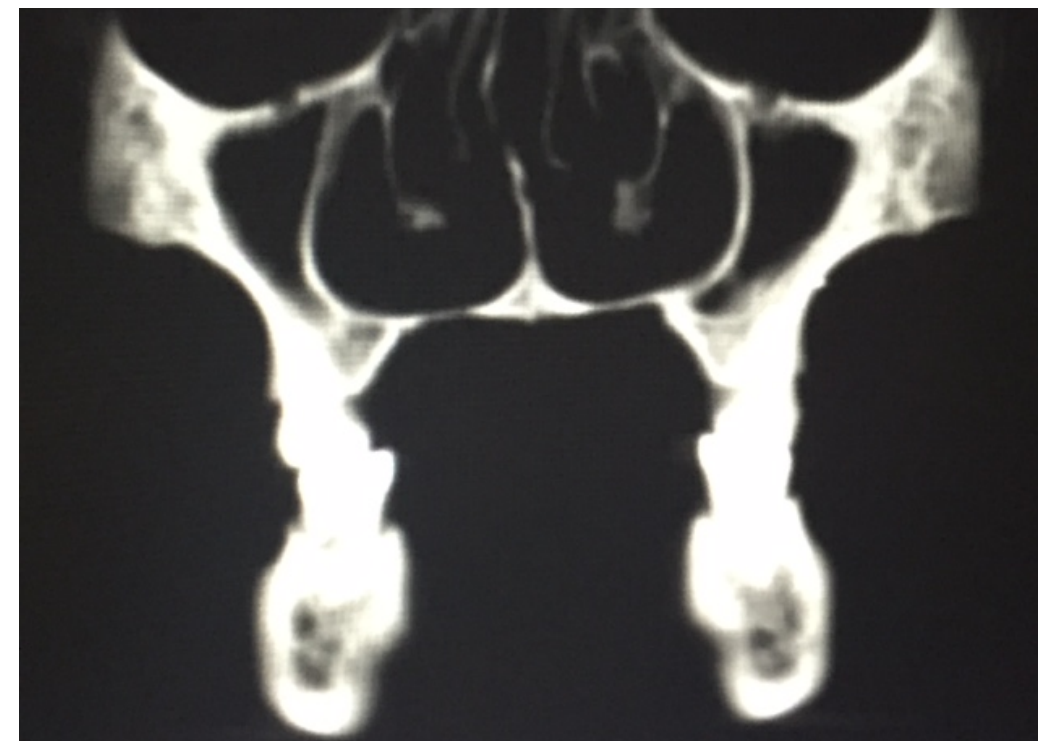




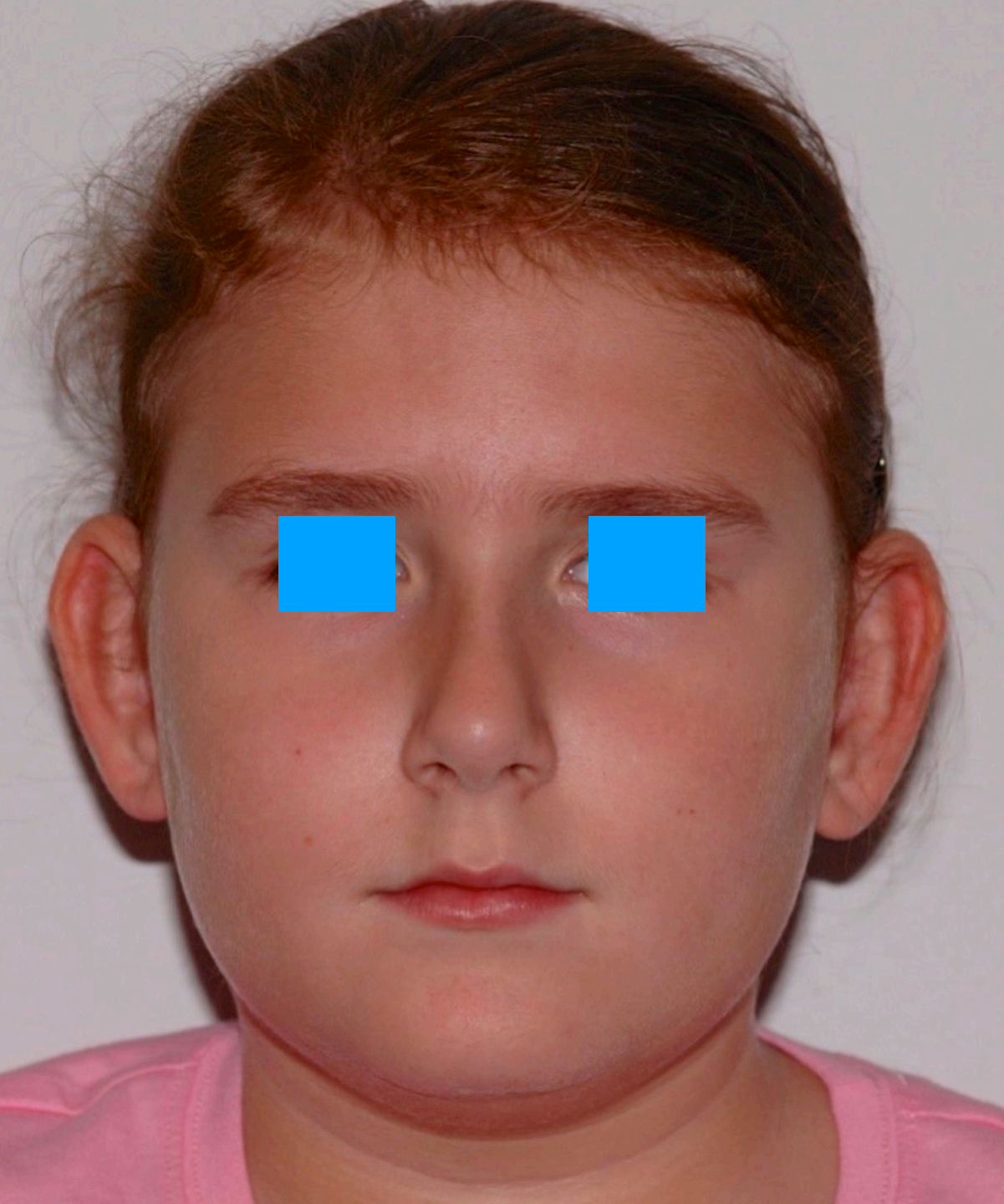


4 mm of expansion





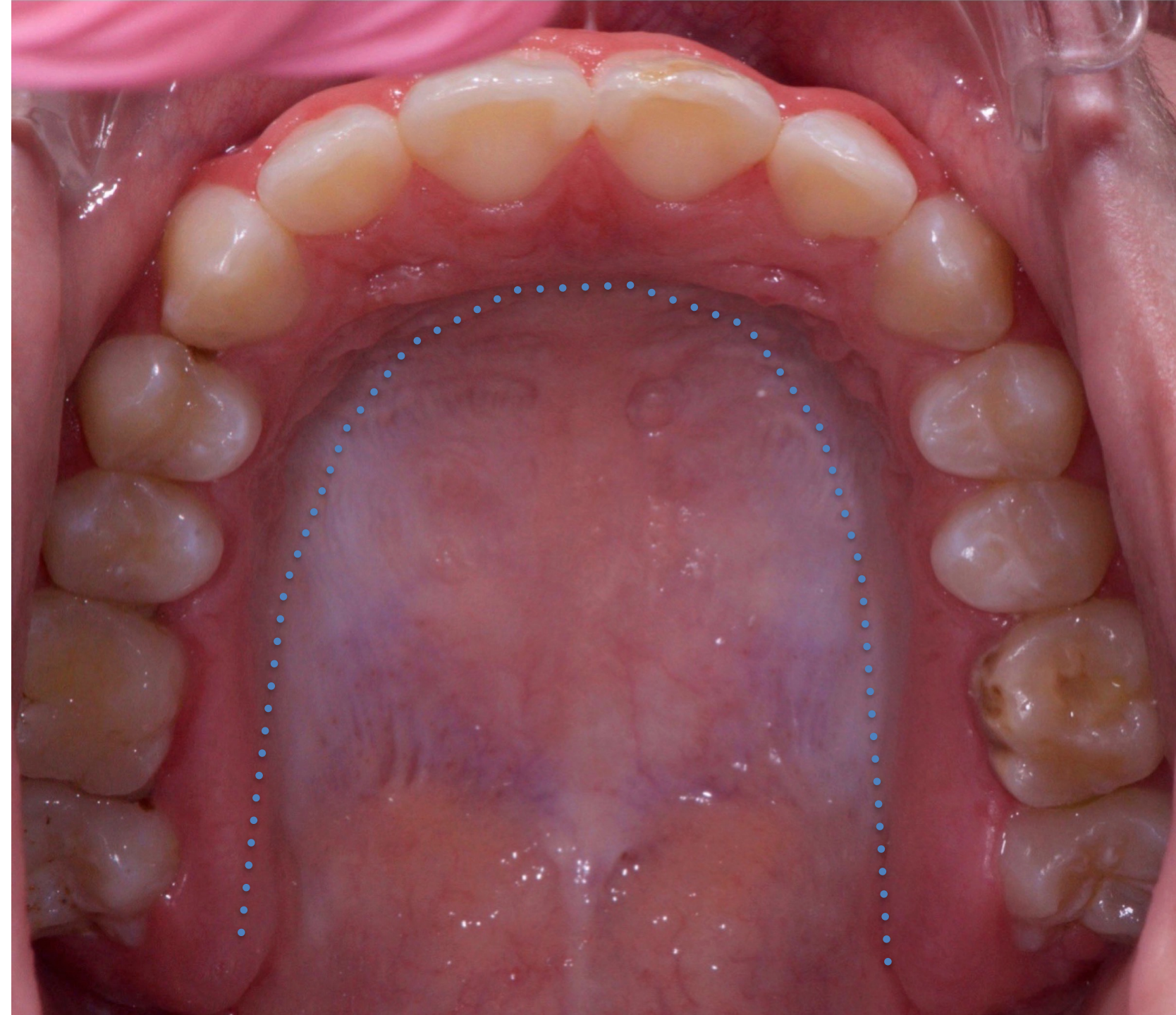
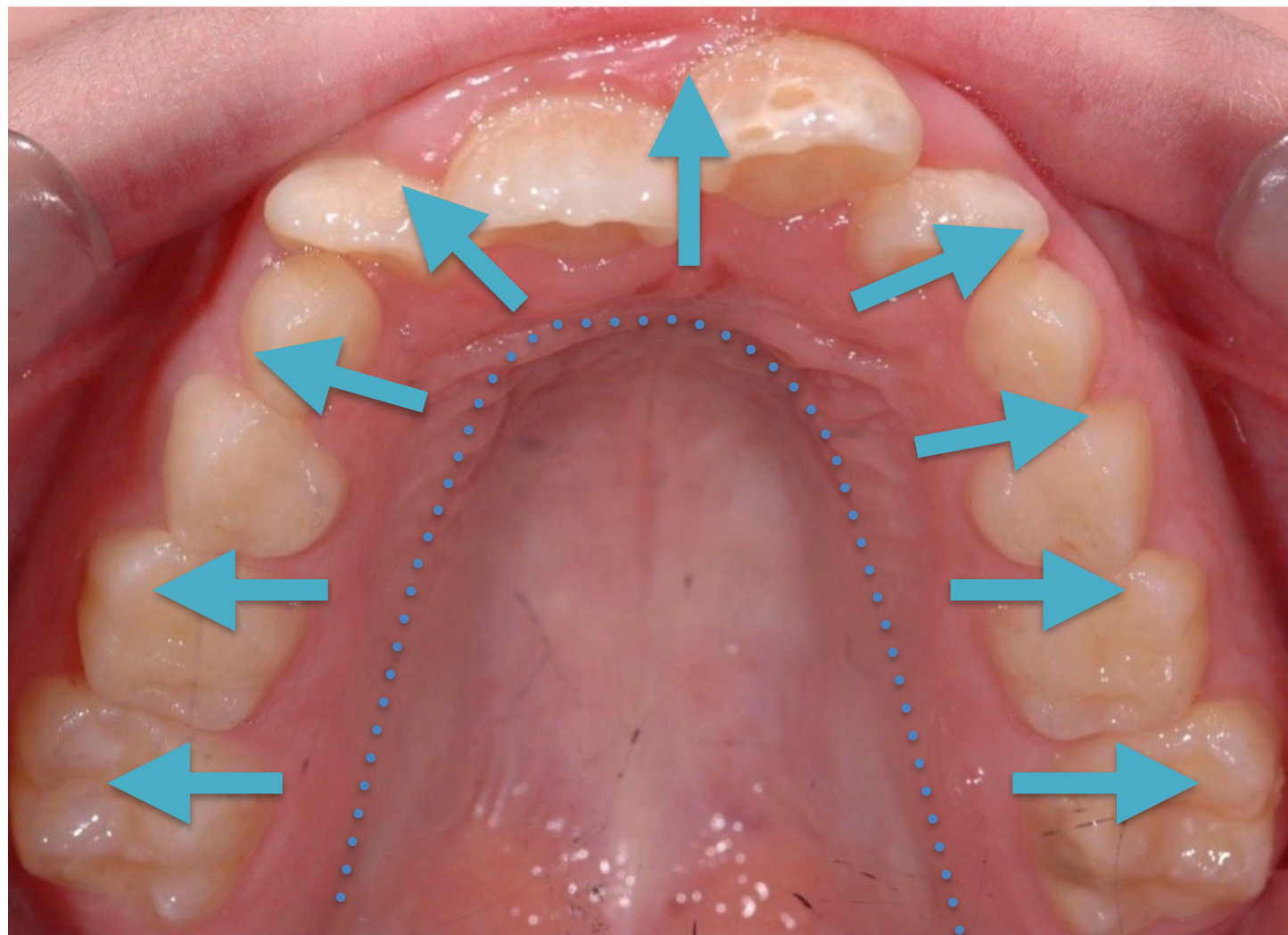








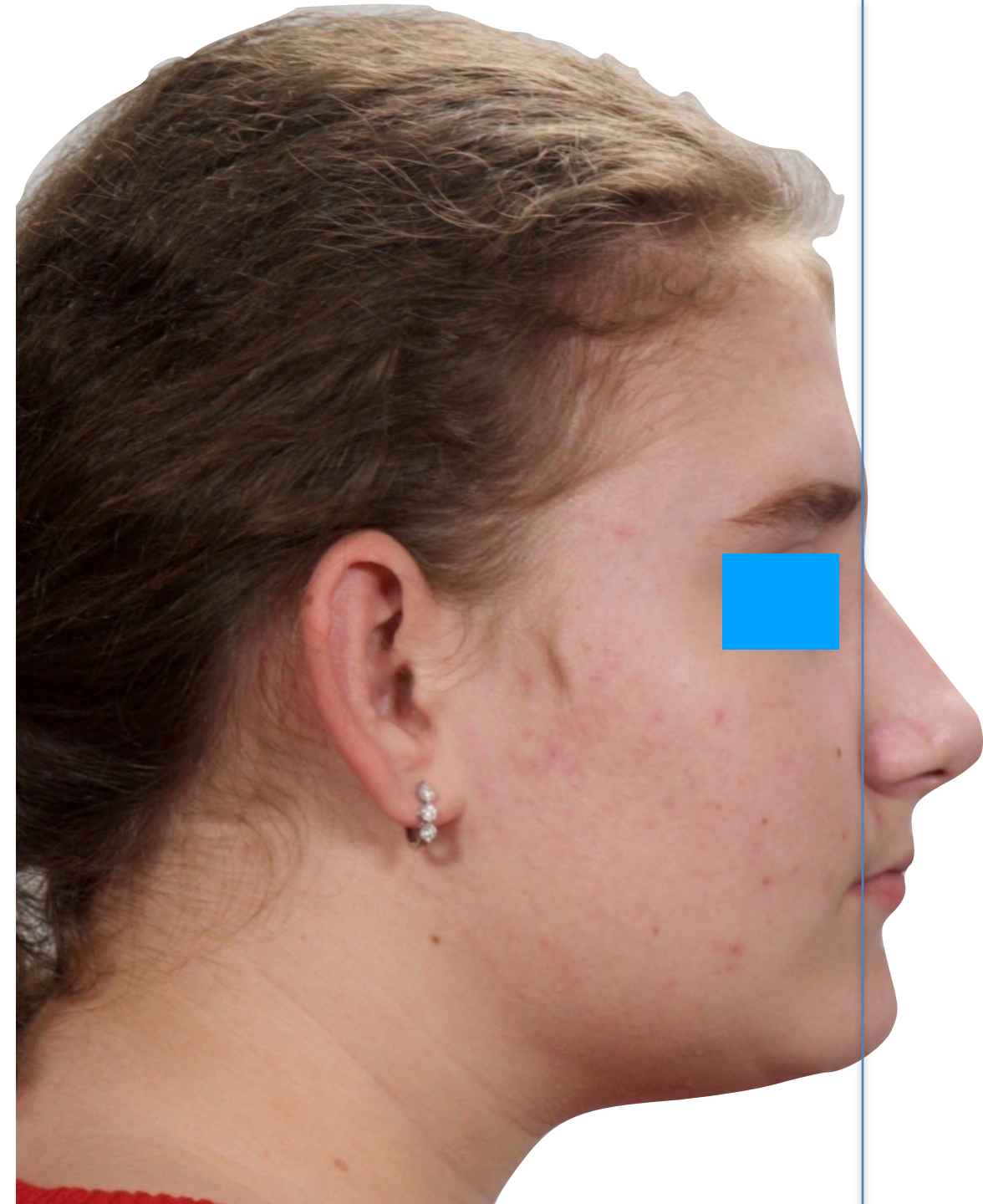
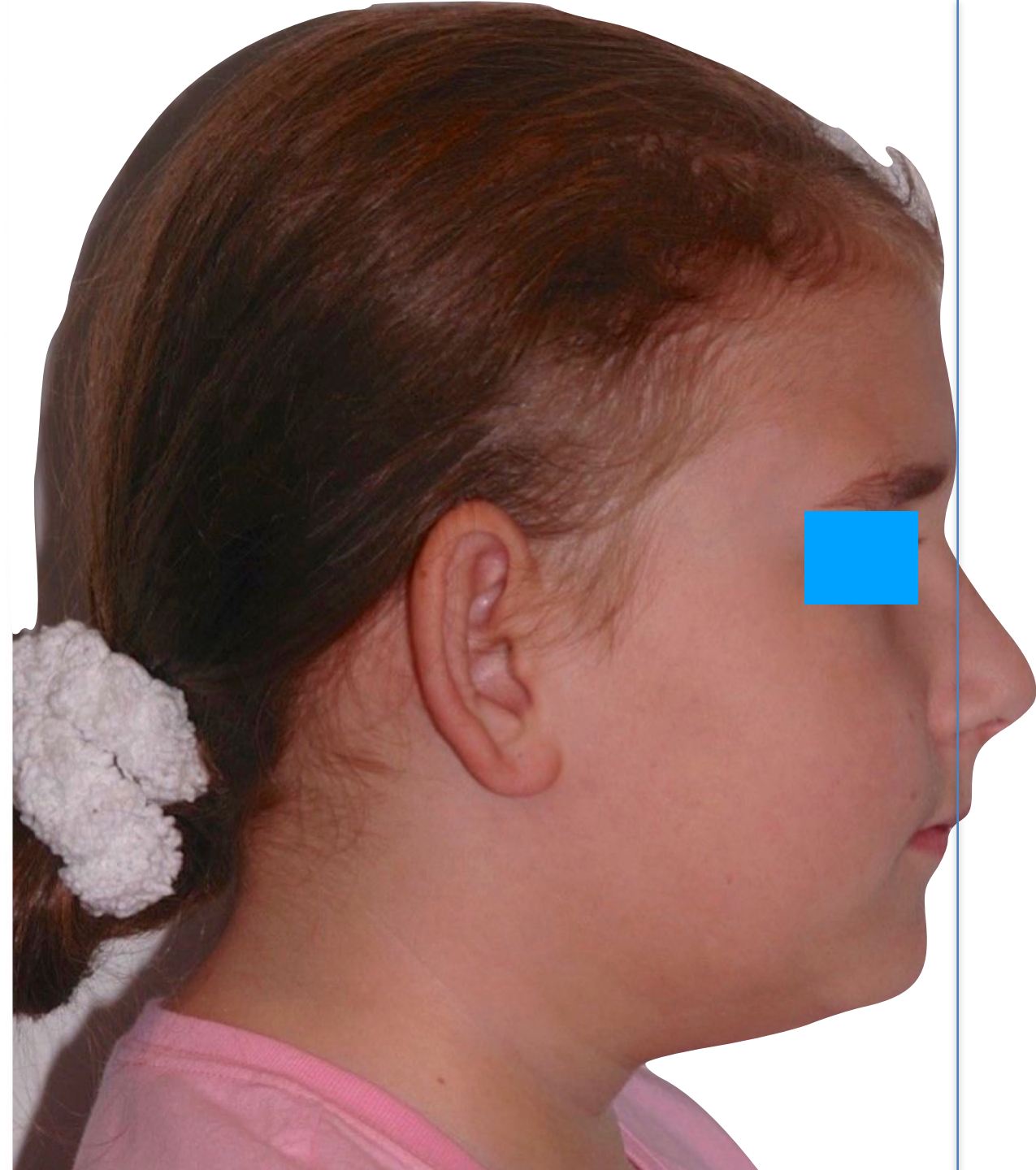




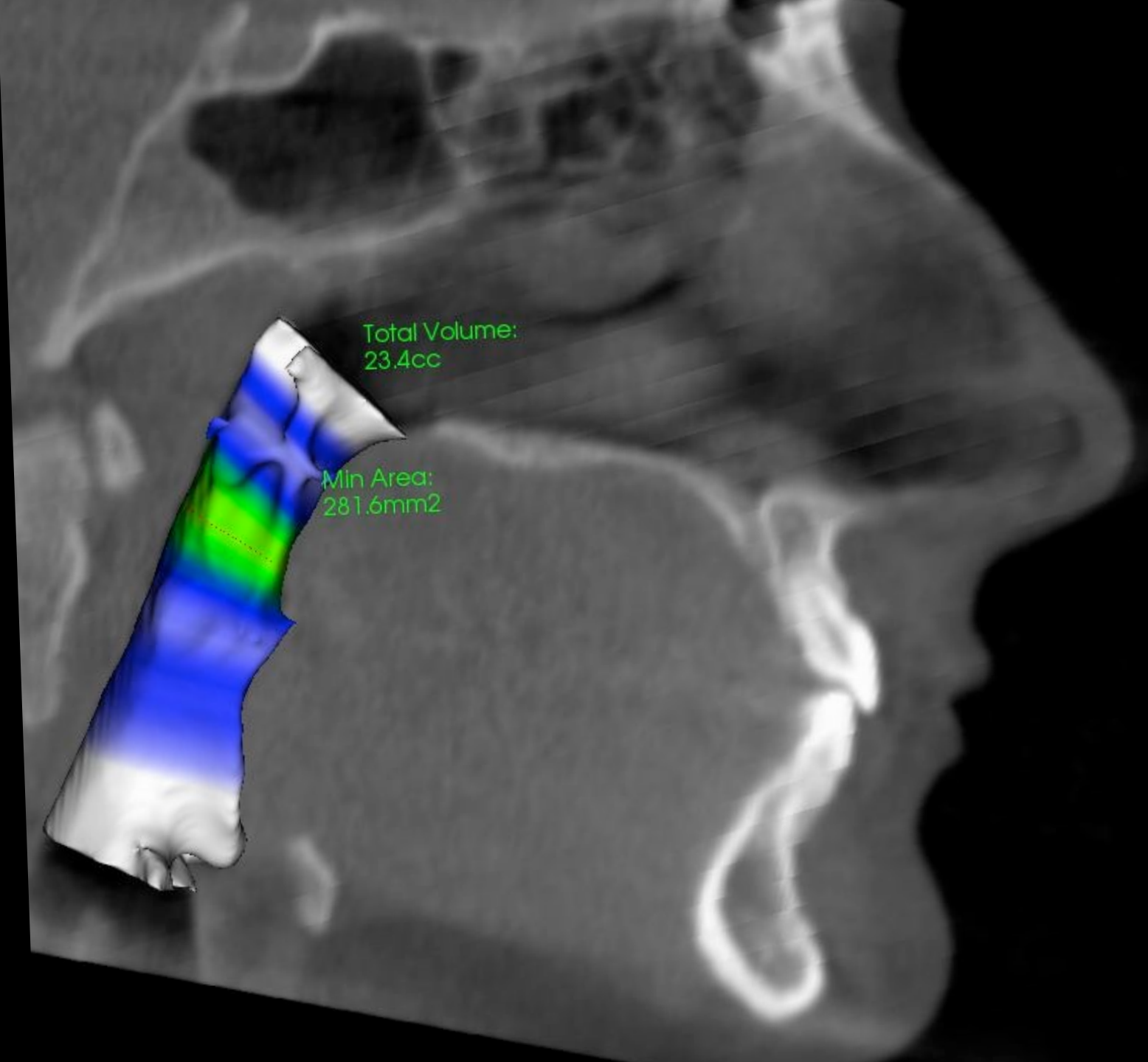
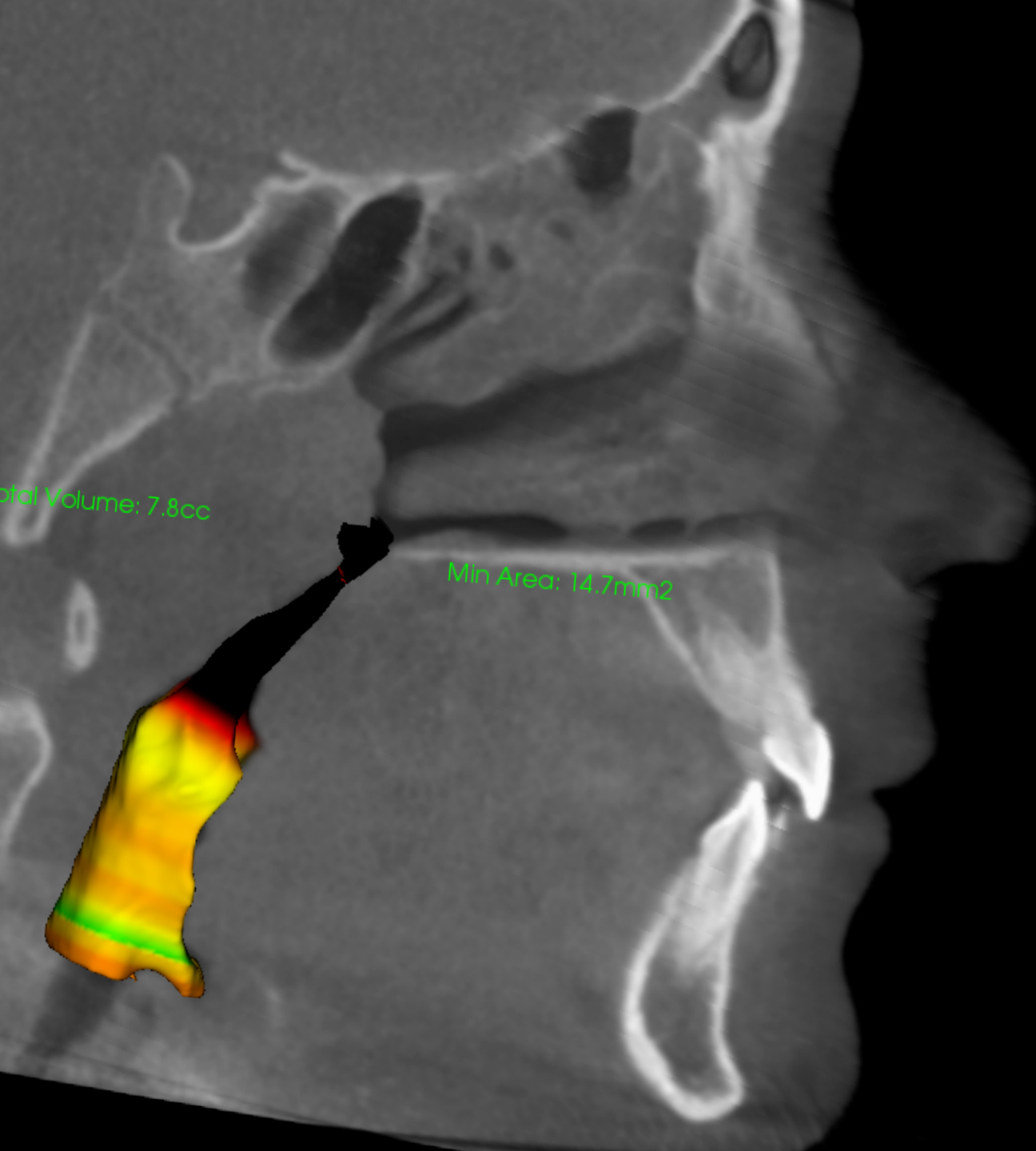




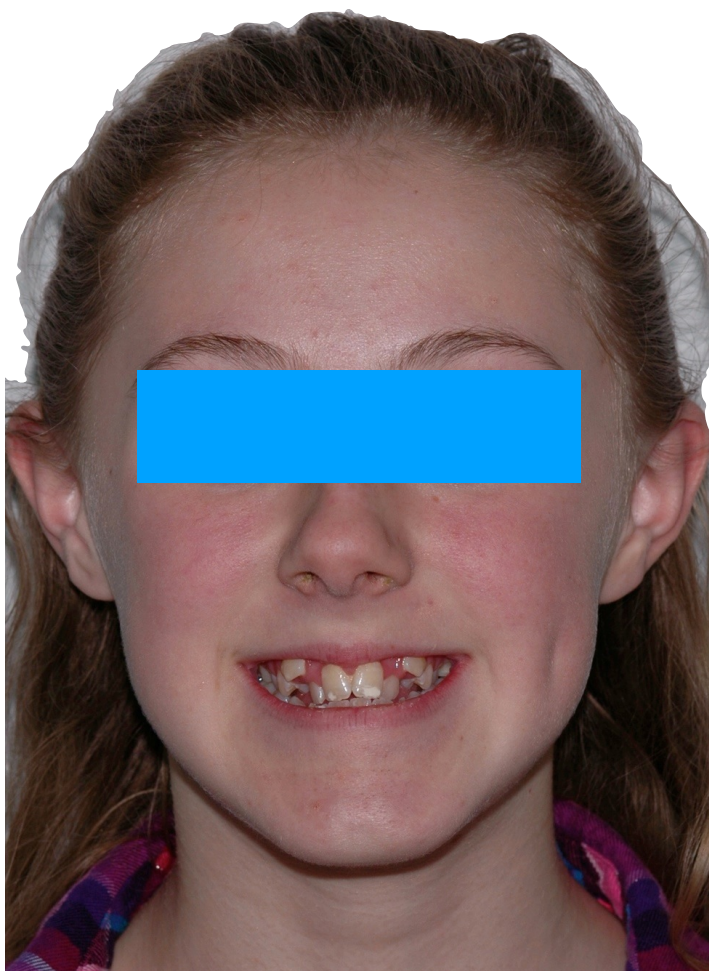




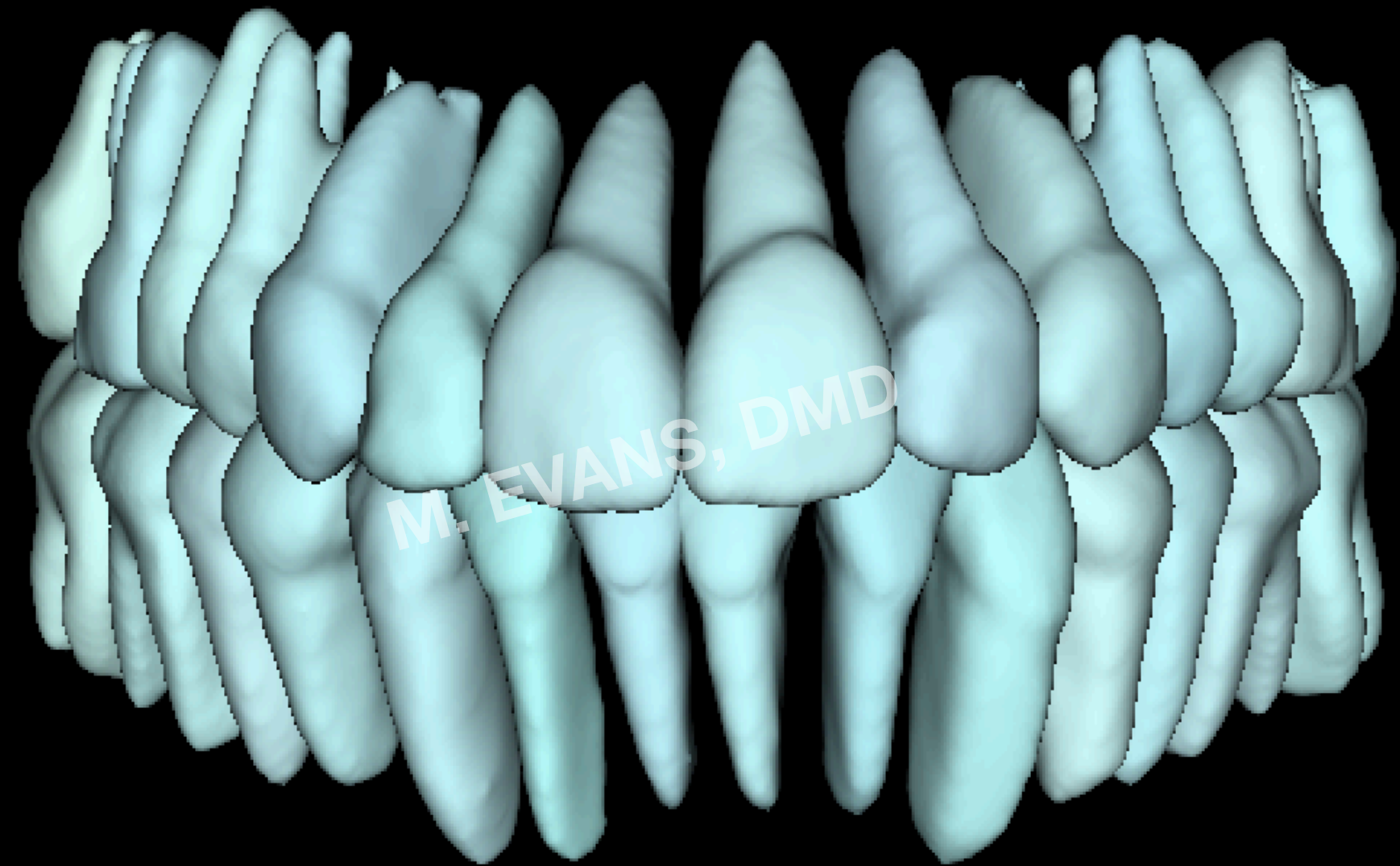
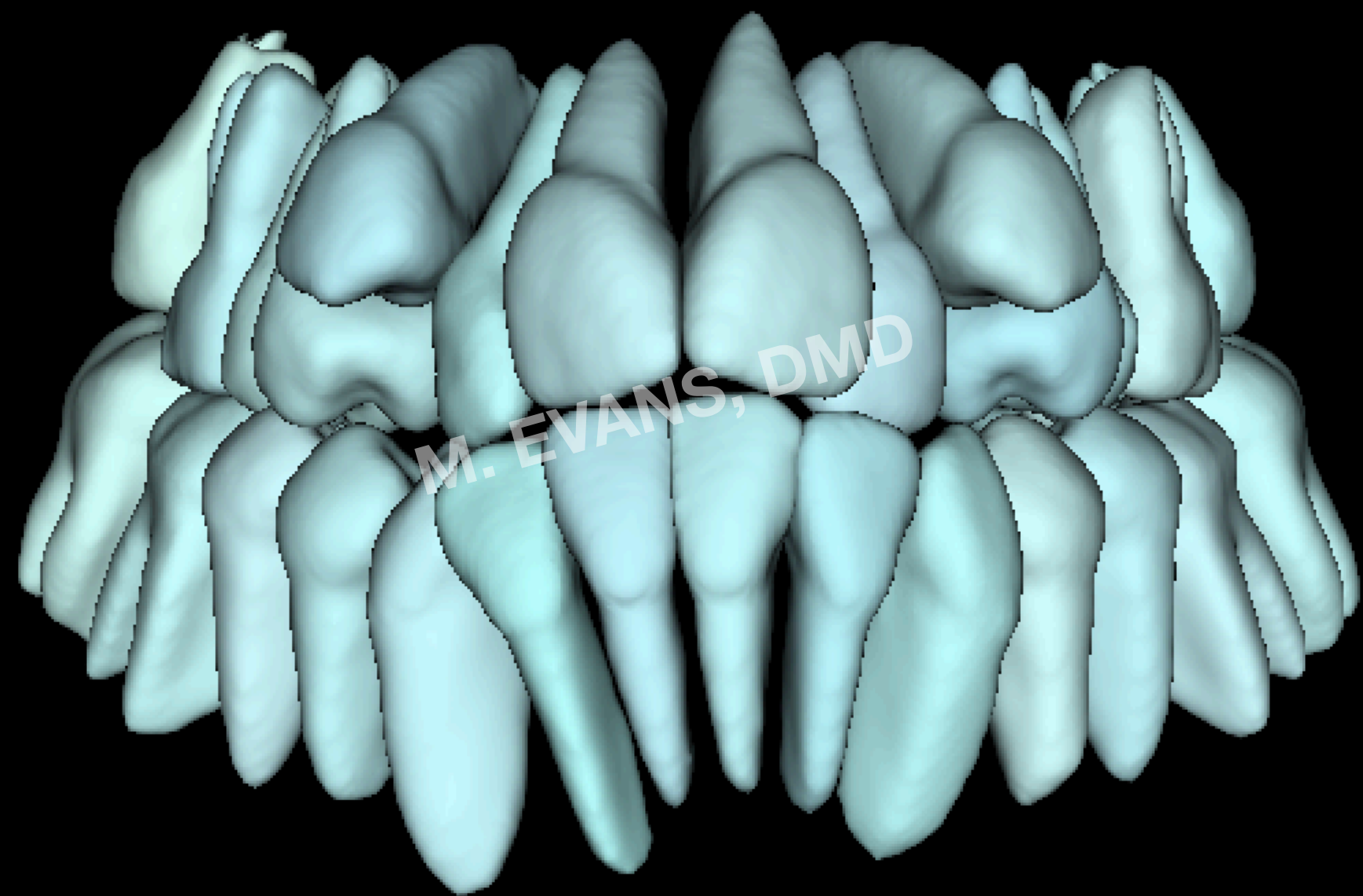




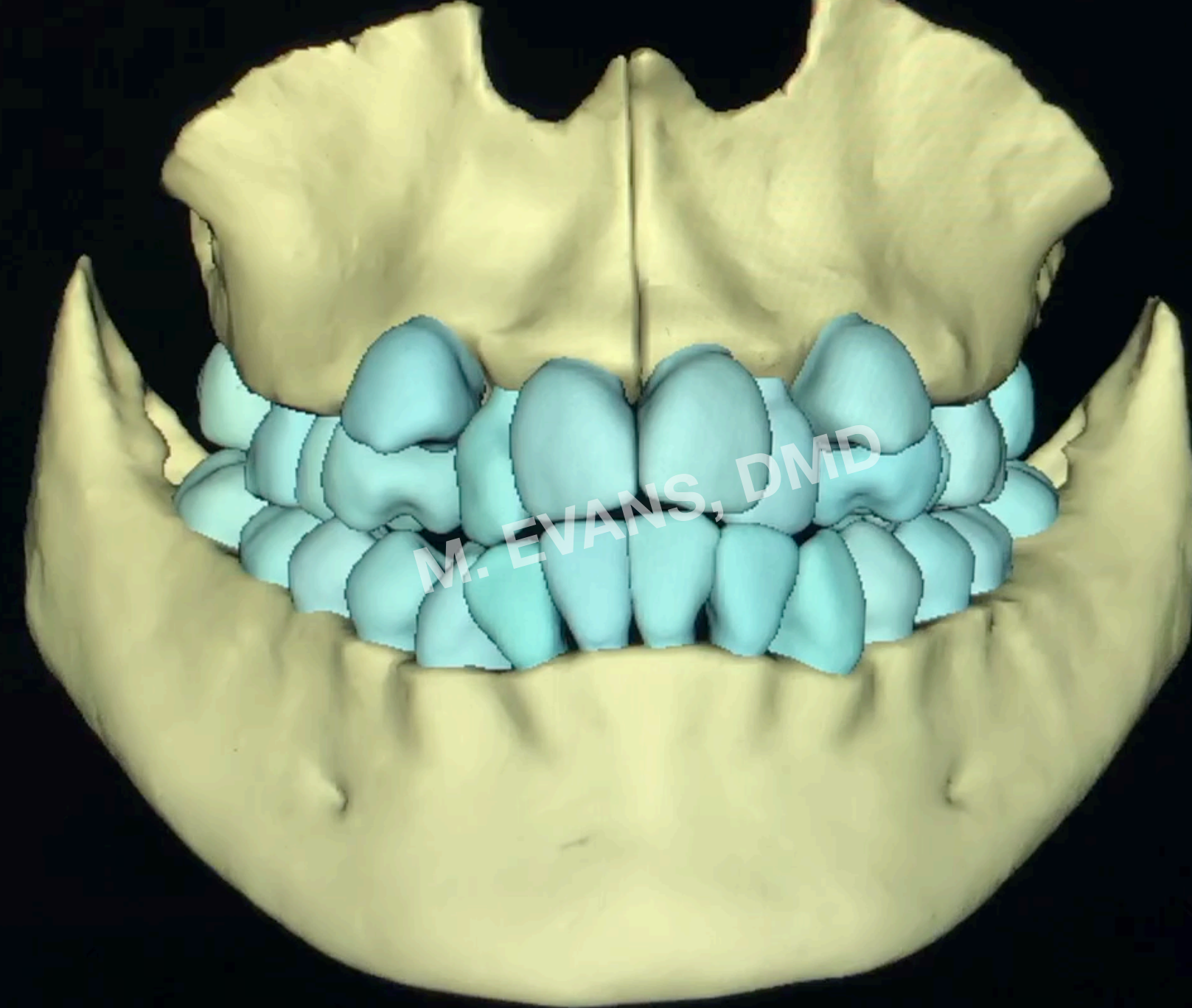














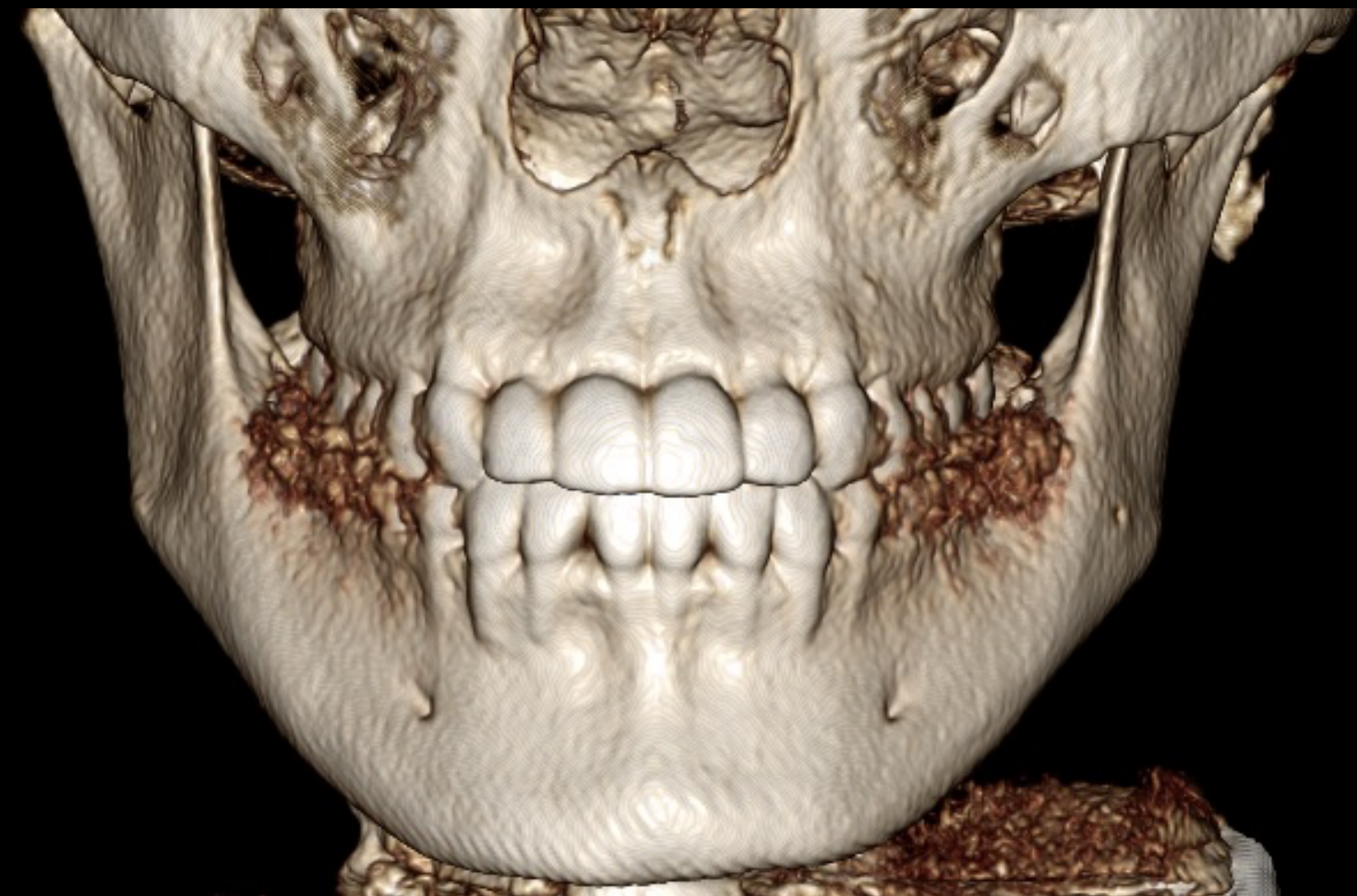
**Before**



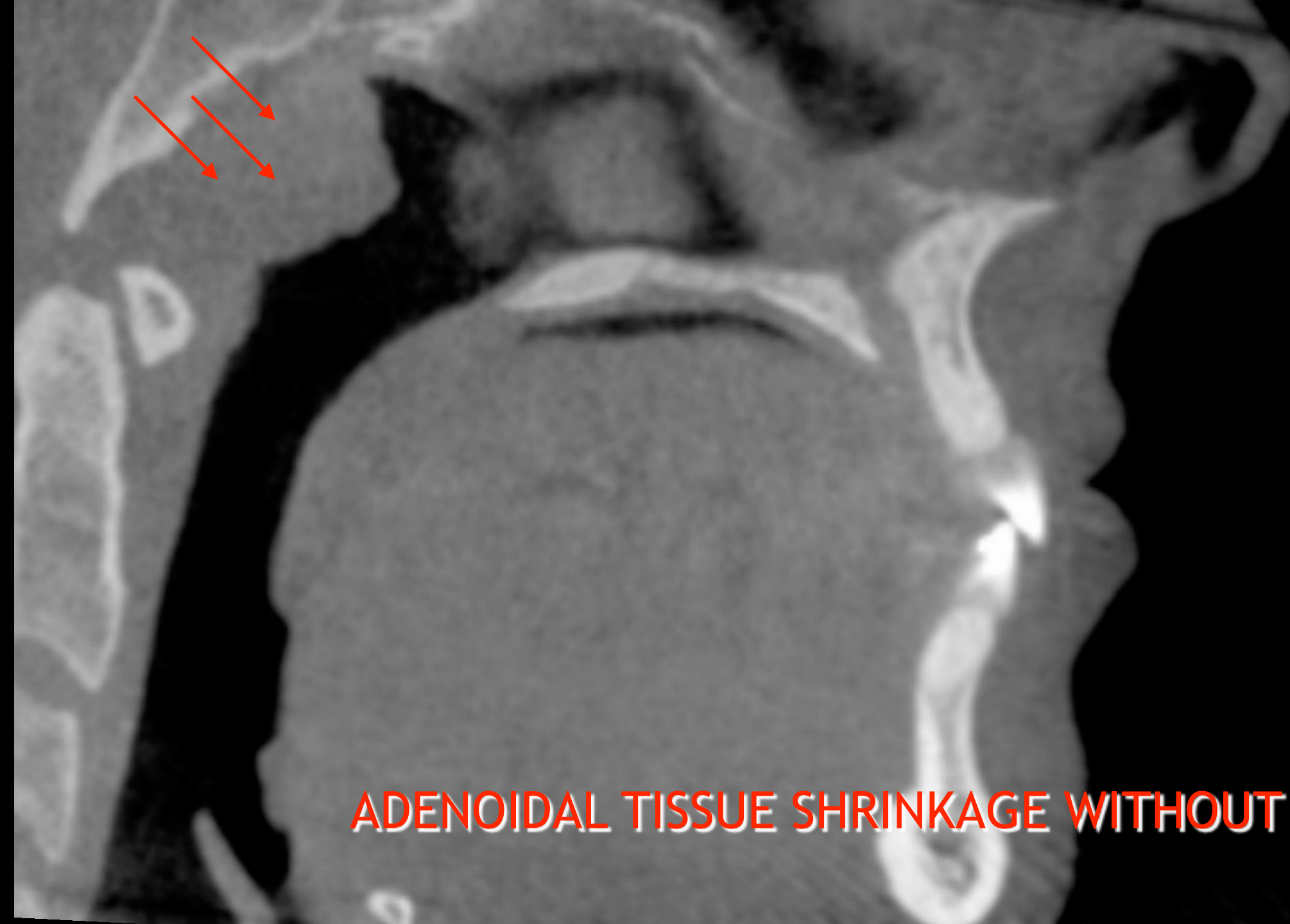
**2 weeks after  
expansion**



**After debonding**



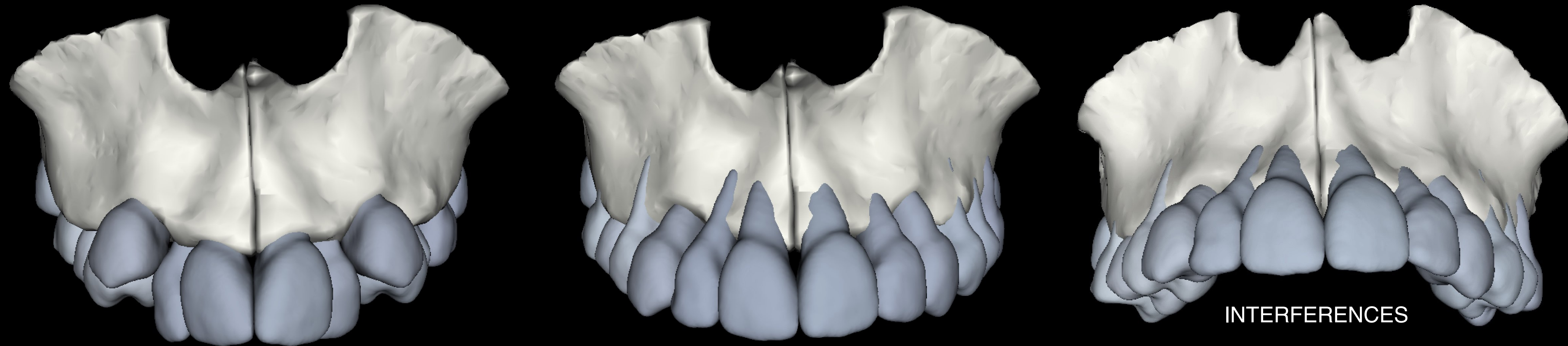




**ADENOIDAL TISSUE SHRINKAGE WITHOUT SURGERY**

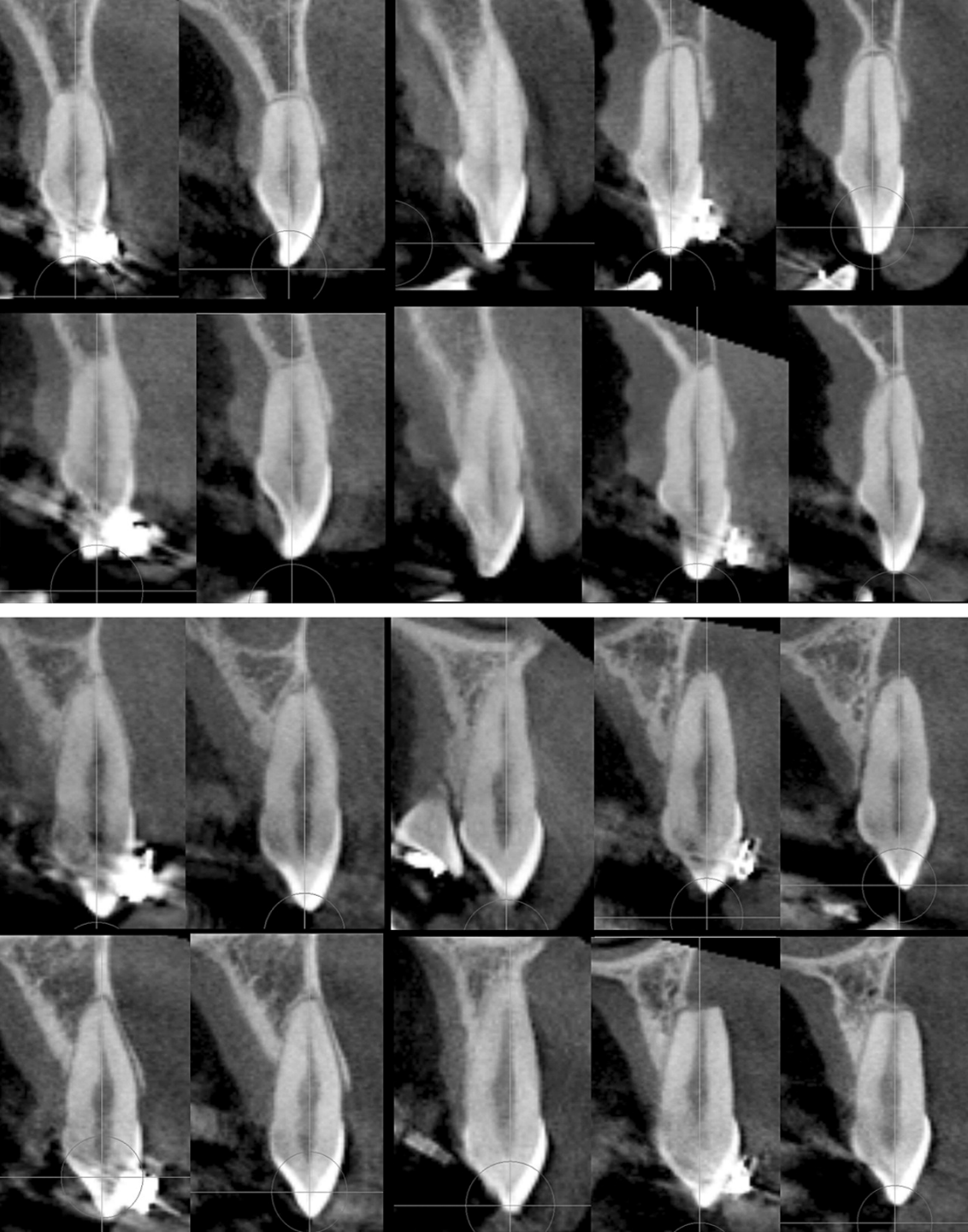


# NON-EXTRACTION DENTO-ALVEOLAR EXPANSION PRESENTS PERIODONTAL RISKS

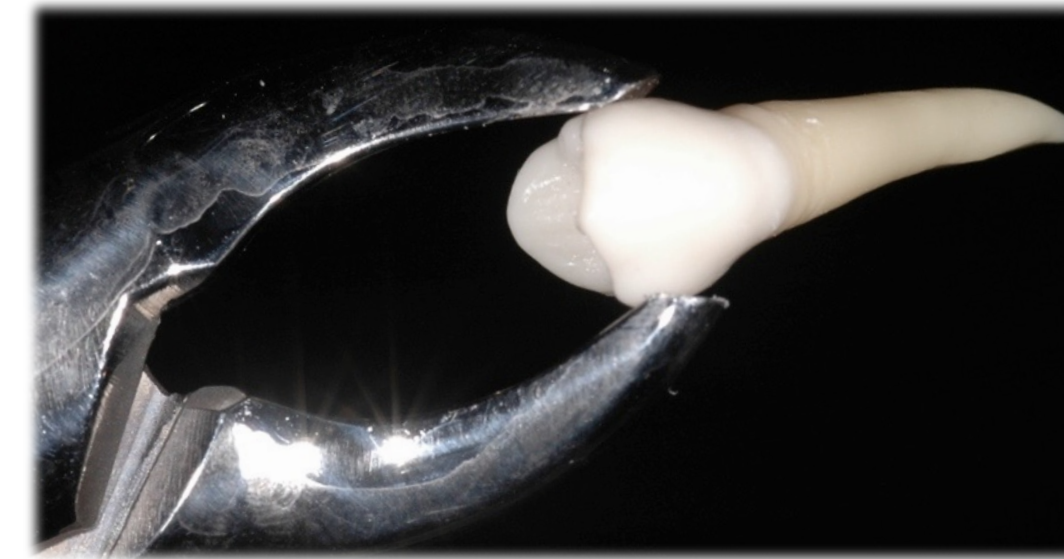


*J. MORAIS ET AL; ANGLE ORTHOD. 2018;88:748-756*



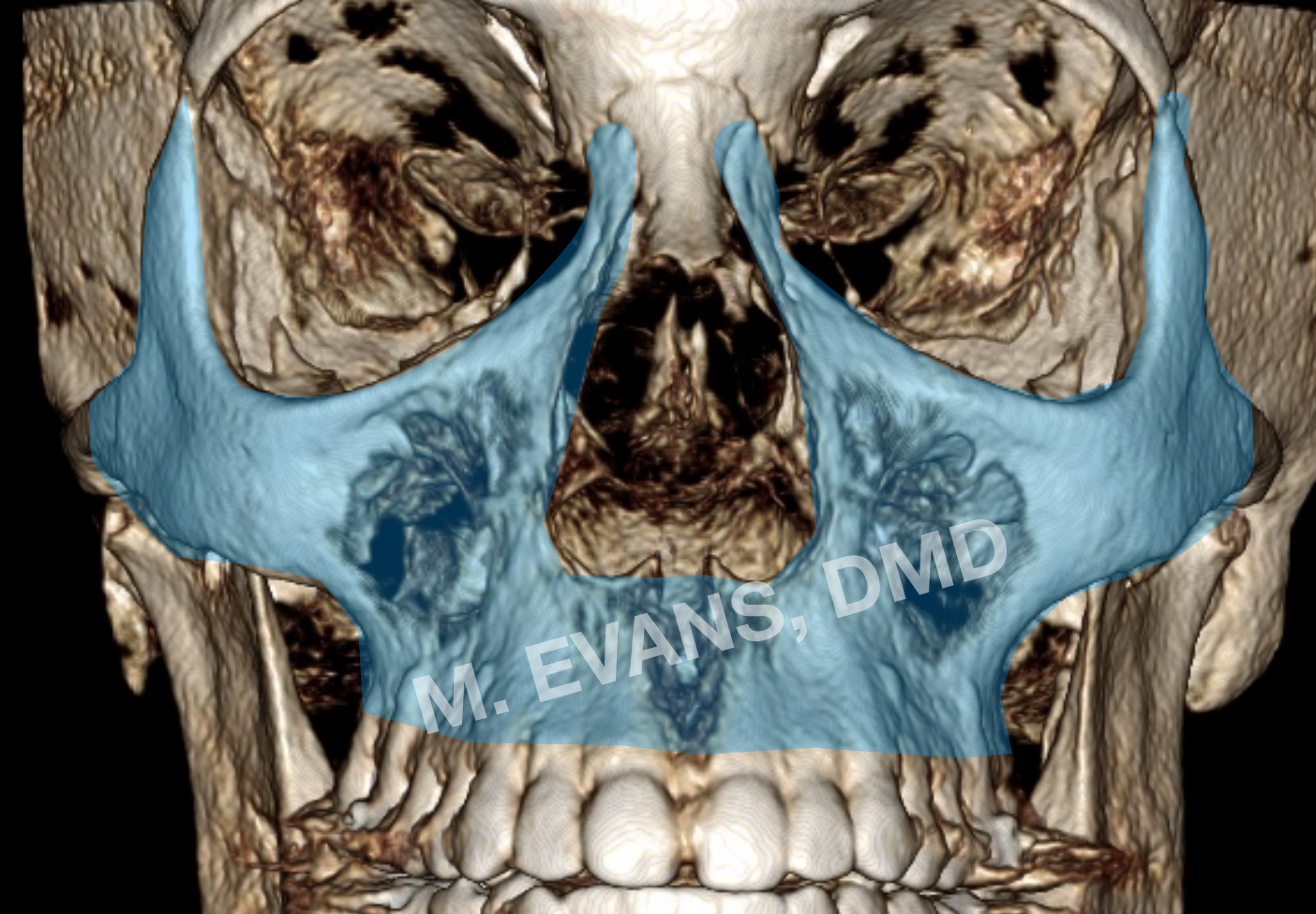


CONVENTIONAL ORTHODONTICS IS A **RISK** FOR ALVEOLAR BONE  
LOSS AND ROOT RESORPTION  
(**PREMOLAR EXTRACTIONS**)



*ANGLE ORTHO 2013: VOL.83, N2, PP.212-221*





**NON-SURGICAL MARPE**

**LE FORT 3**



**MAXILLA**

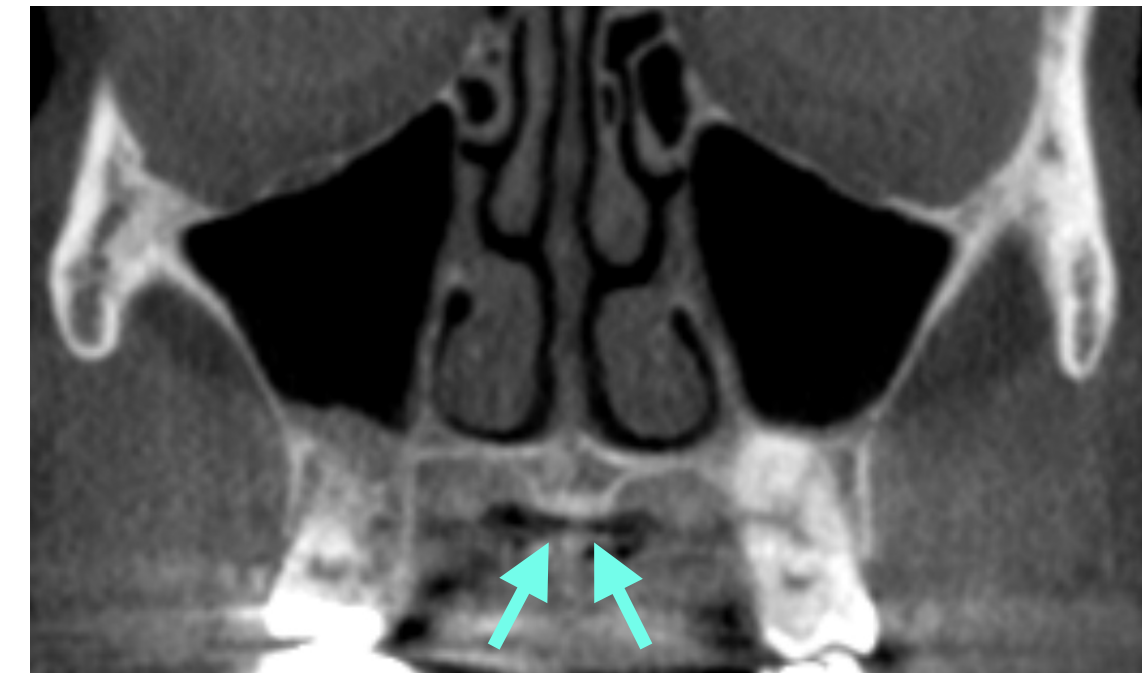
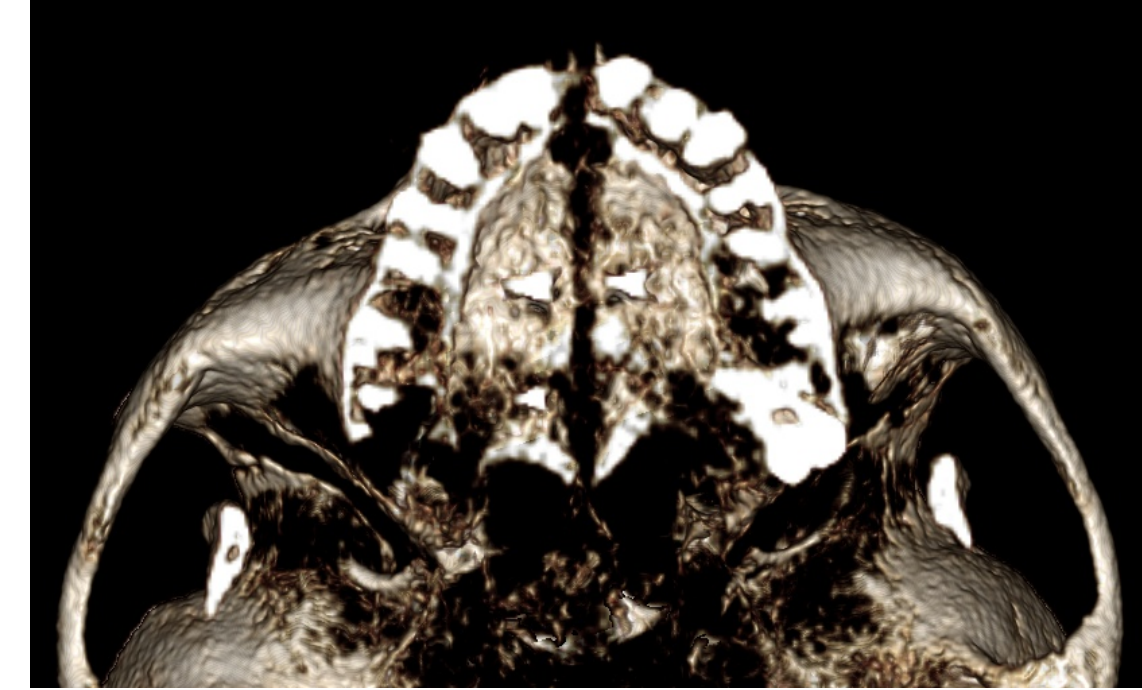
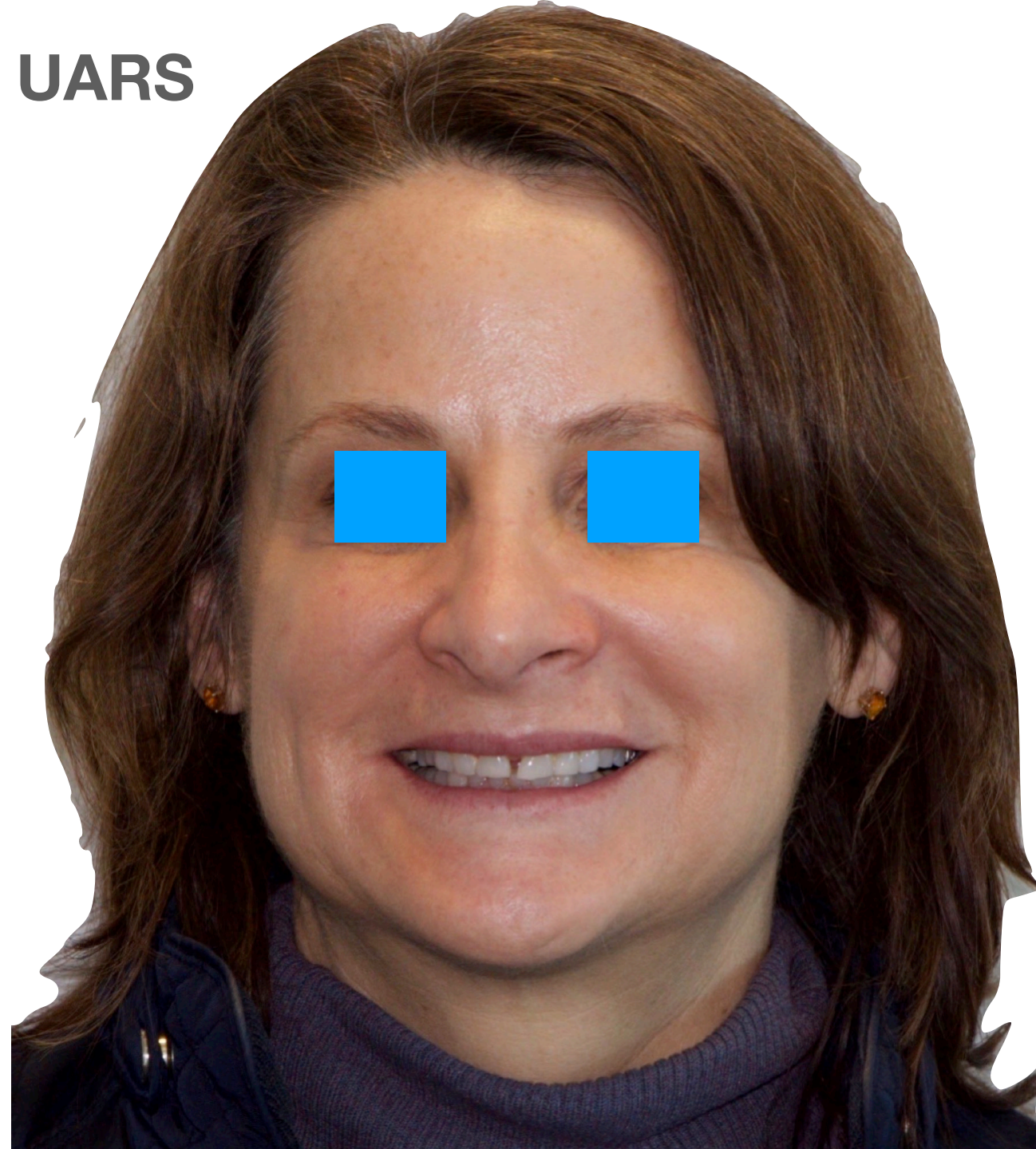
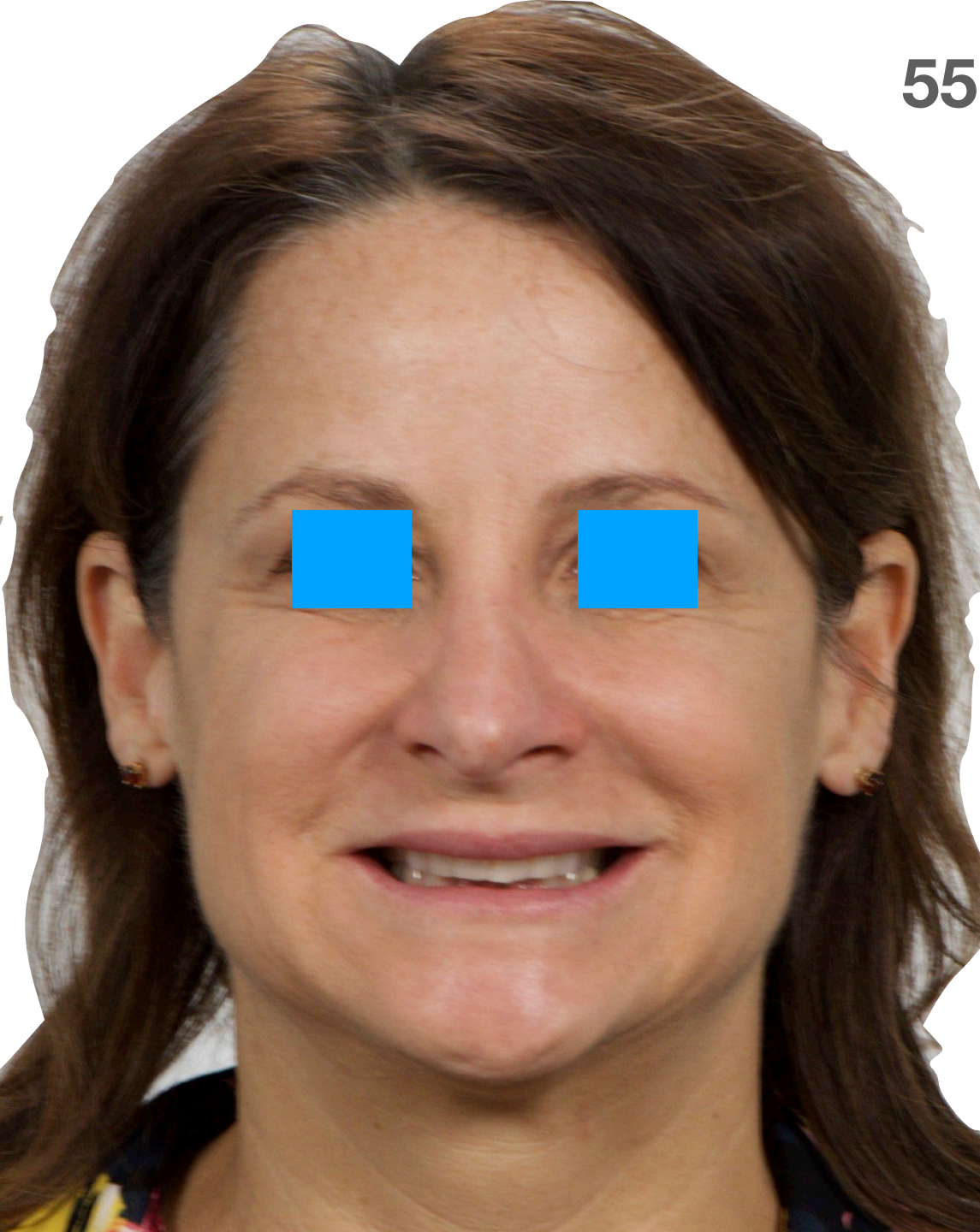


**SURGICAL SARPE, DOME**

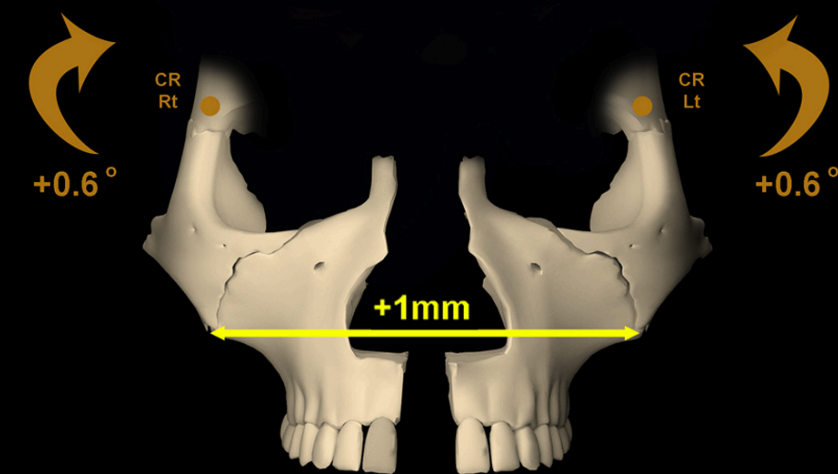
**LE FORT 1**



55 Y.O. WITH UARS



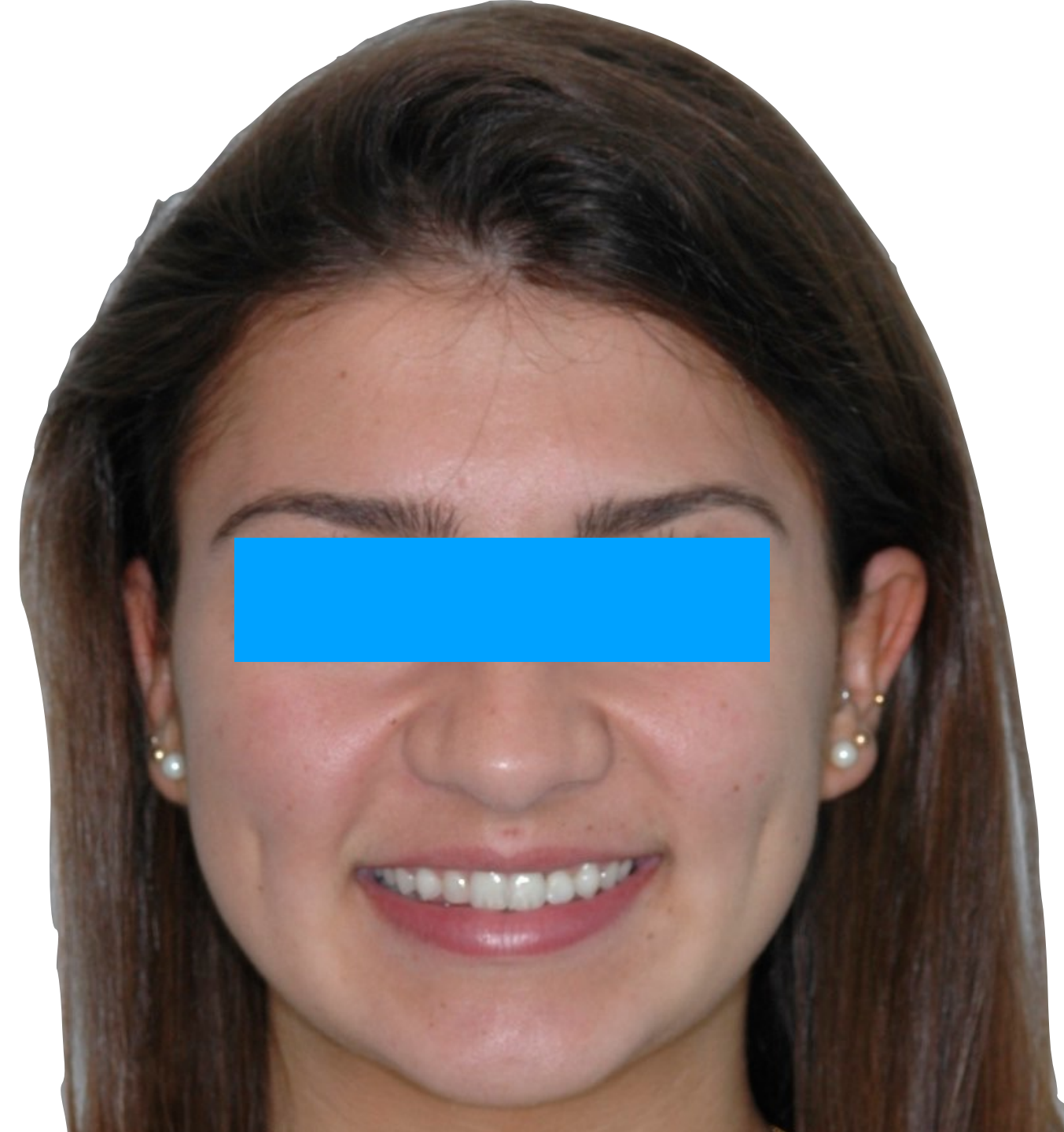




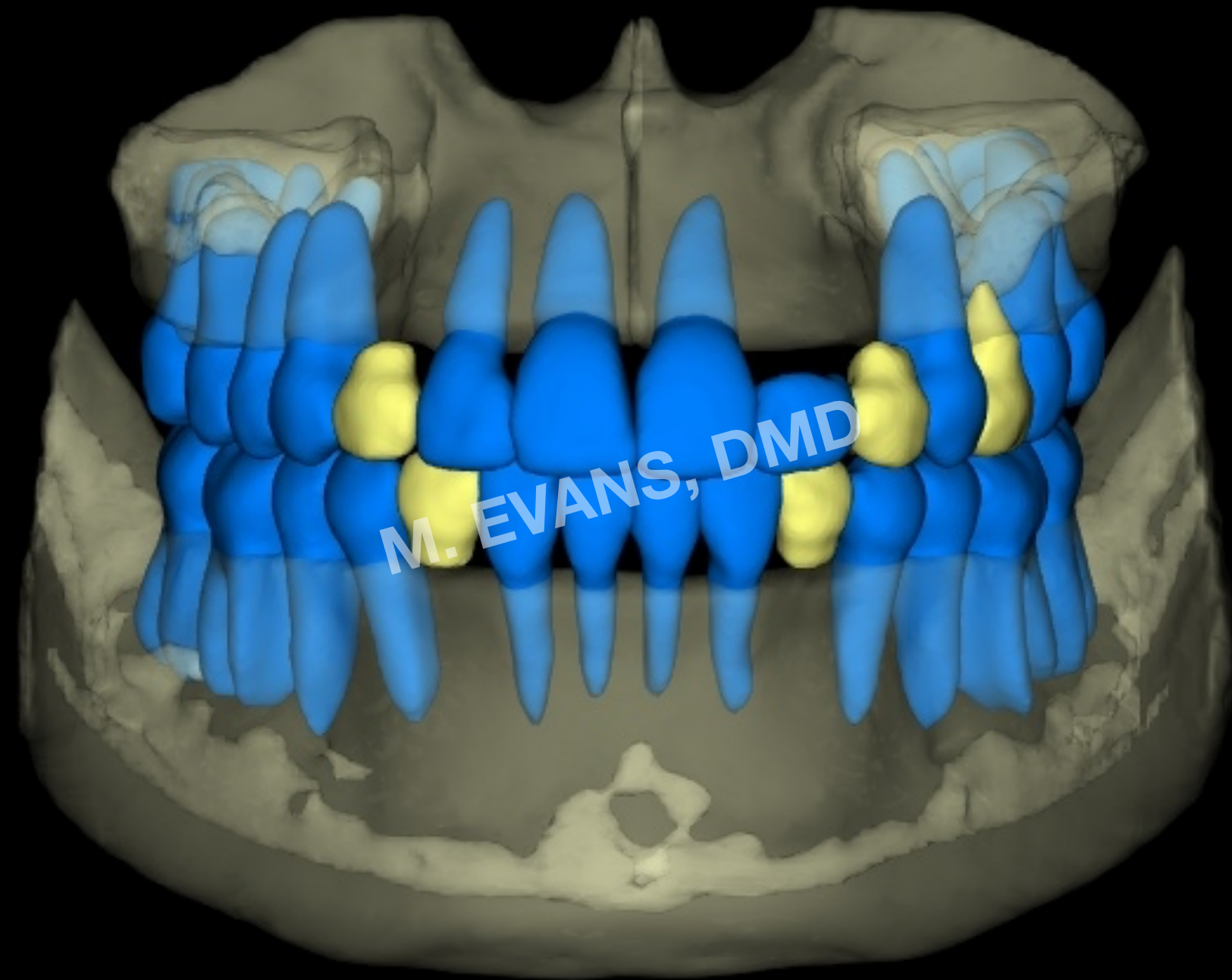
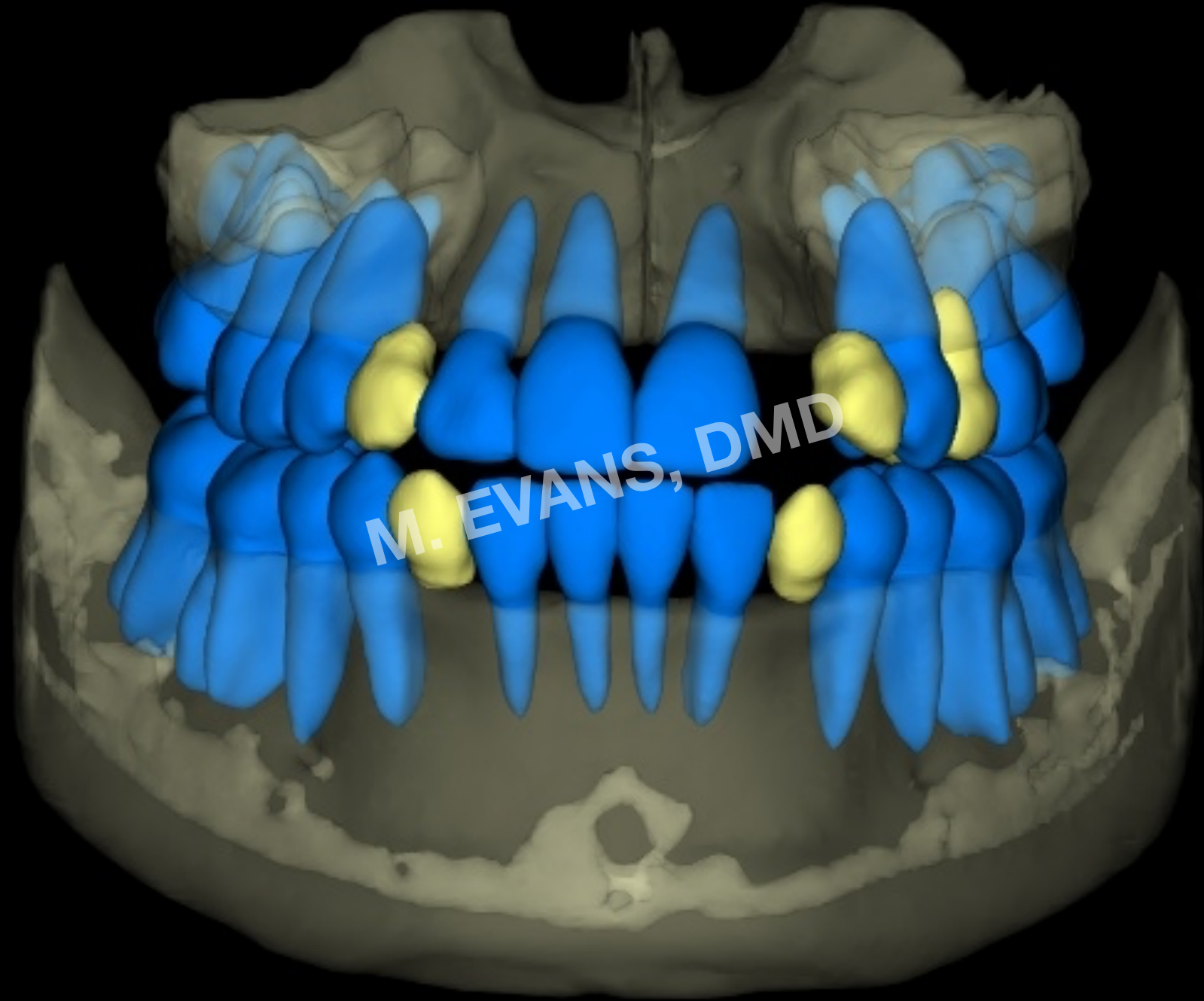
















12 MONTHS FROM START TO FINISH...

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## RATIONALE FOR IMPLANT-ASSISTED EXPANSION....

- Greater velocity of skeletal expansion
- Less dental tipping
- Long-term stability (3 year follow up)
- Greater improvement in nasal resistance, nasal score
- Improvement in OSA parameters (DOME)



**MEVANS@INFINITYORTHOPERIO.COM**





THANK YOU

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PERIODONTIUM

OCCLUSION  
TMJ

AIRWAY

ESTHETICS