University “G. d’Annunzio” Chieti – Pescara
Department of Medical , Oral and Biotechnological Science
Director Prof. Sergio Caputi

Orthodontics Specialty School
Director Prof. Felice Festa

Orthopaedic and 3D Functional Therapy

Dr.ssa Monica Macrì

http://www.felicefesta.it/team.html#monicateam

47th SIDO International Congress

“Patient-important outcomes in Orthodontics”

Florence 13-15 October 2016

ORTHOPAEDIC AND 3D FUNCTIONAL THERAPY

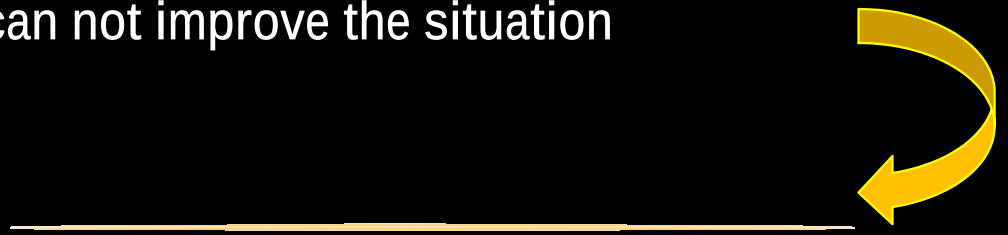
- Frankel Function Regulator
- Expansion cases in 2D and 3D / Changing-P
- TMD in children

PREVENTIVE ORTHODONTICS

Prevent a malocclusion before it occurs
Knowing the etiology of dysgnathia, malocclusions and craniofacial dysmorphoses
Rating in the first 3-5 years of life

INTERCEPTIVE ORTHODONTICS

Malocclusion in place
Aged between 5 and 12 years
- Major increase in growth
- Ability to influence 30% of the residual growth
- It 's possible that we can not improve the situation



LATE ORTHODONTICS

PURPOSE OF INTERCEPTIVE TREATMENT

- Correcting imbalances of skeletal, dental or muscle to improve the environment before full eruption of the permanent teeth
- Minimize the need for subsequent, more complex treatments (extractions, orthognathic surgery)

ORTHOPAEDIC AND 3D FUNCTIONAL THERAPY

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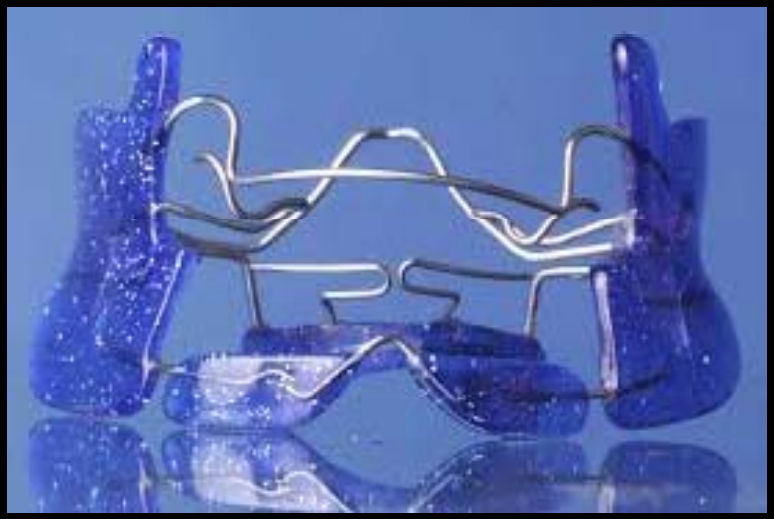
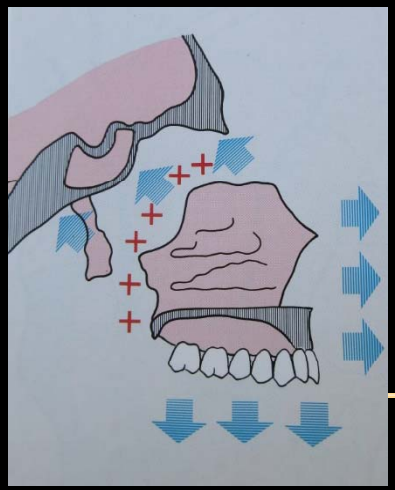
FRANKEL FUNCTION REGULATOR

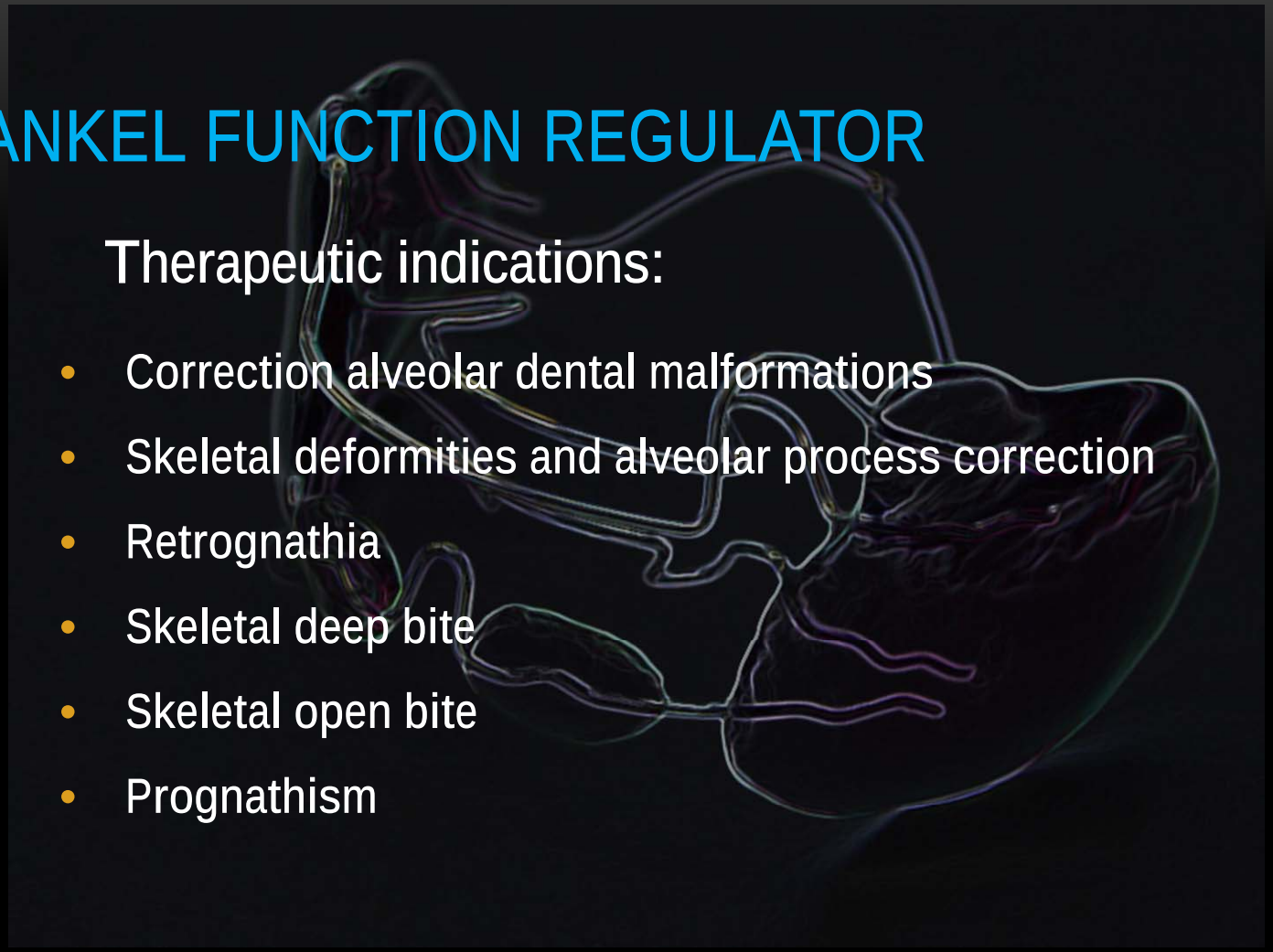


MECHANISMS OF ACTION

1. MUSCULAR ACTIVATION AND STRETCH SOFT TISSUE: tissue viscoelasticity (potential energy) and muscle contraction (kinetic energy)
2. MANDIBULAR DISPLACEMENT AND ACTIVATION OF SOFT TISSUE resulting in induction of stimuli that act on osteogenic tissue (membranous bone growth) and on cartilage (endochondral bone growth)



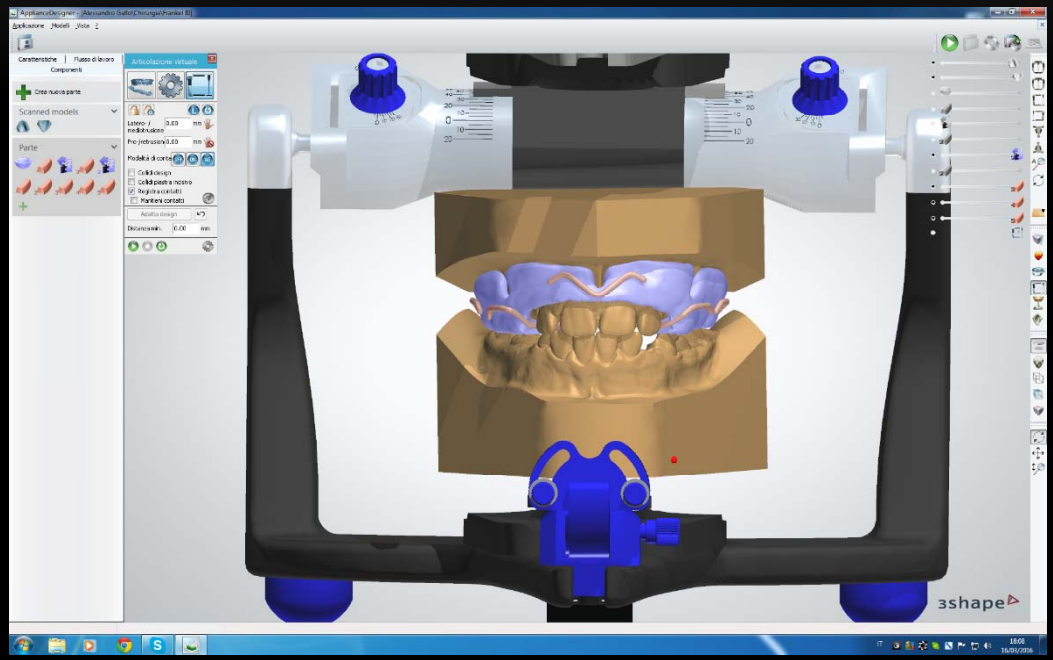
FRANKEL FUNCTION REGULATOR

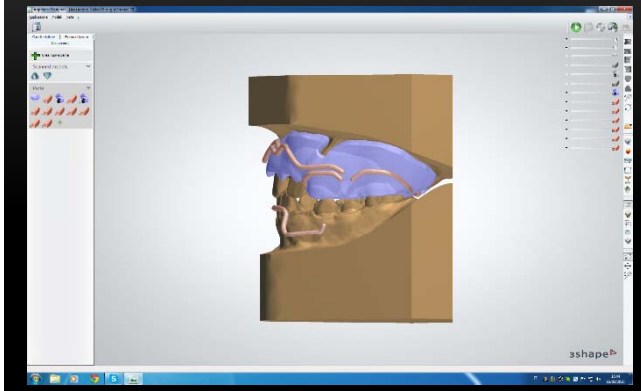


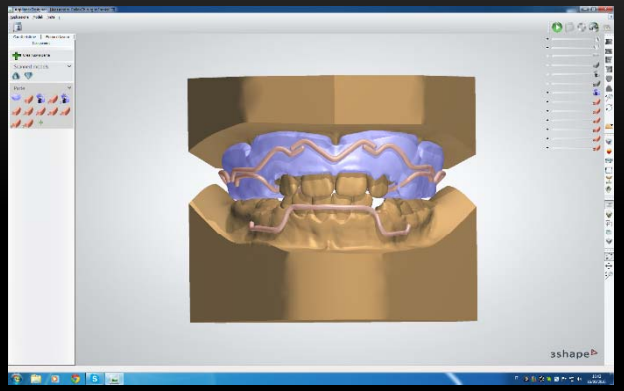
Therapeutic indications:

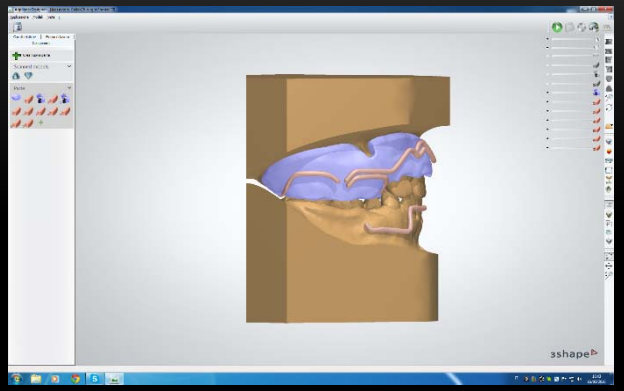
- Correction alveolar dental malformations
- Skeletal deformities and alveolar process correction
- Retrognathia
- Skeletal deep bite
- Skeletal open bite
- Prognathism

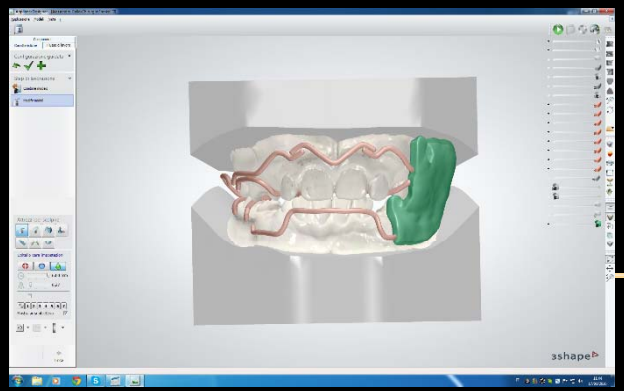
3D FRANKEL FUNCTION REGULATOR

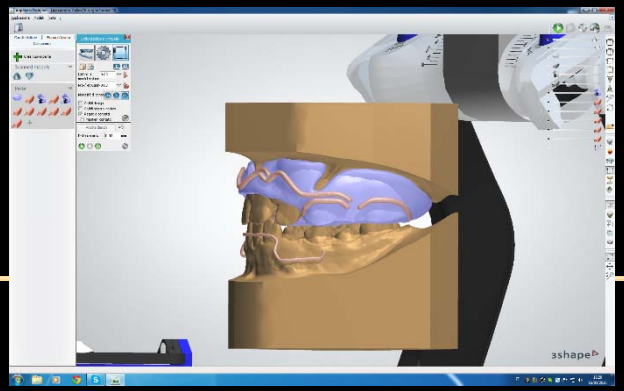


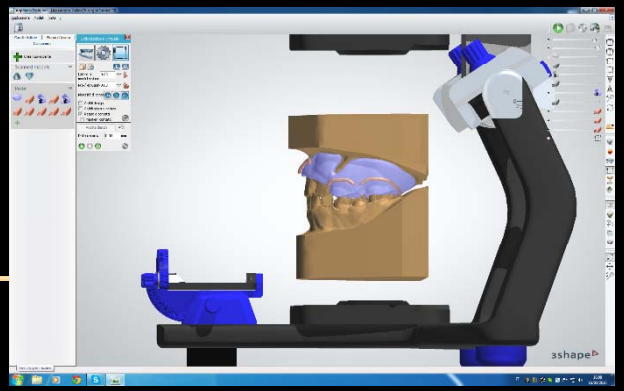


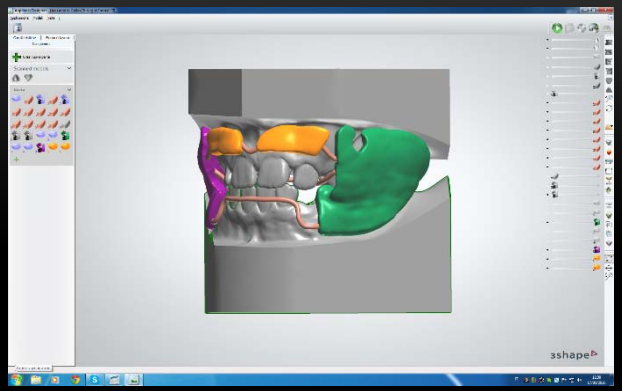


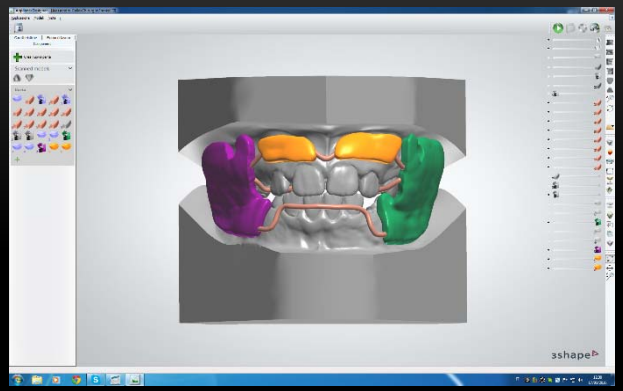


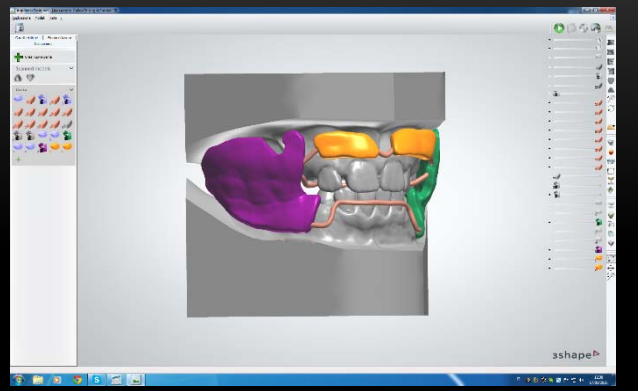


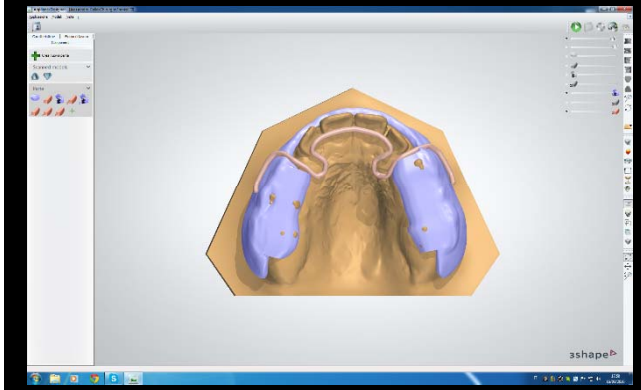


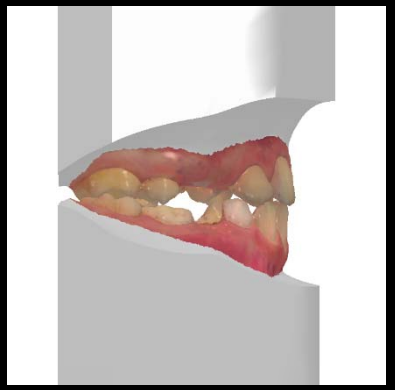


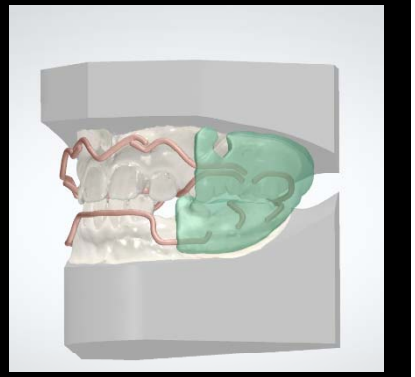


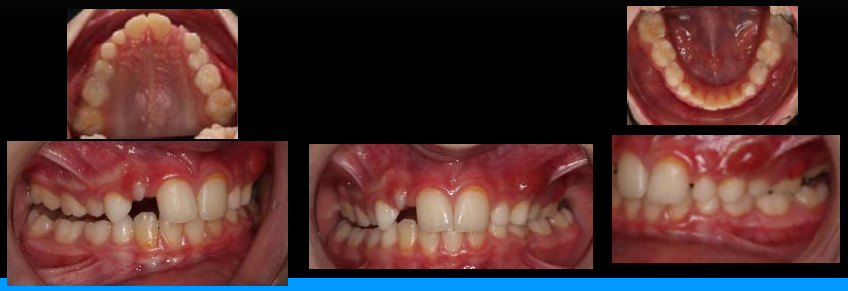










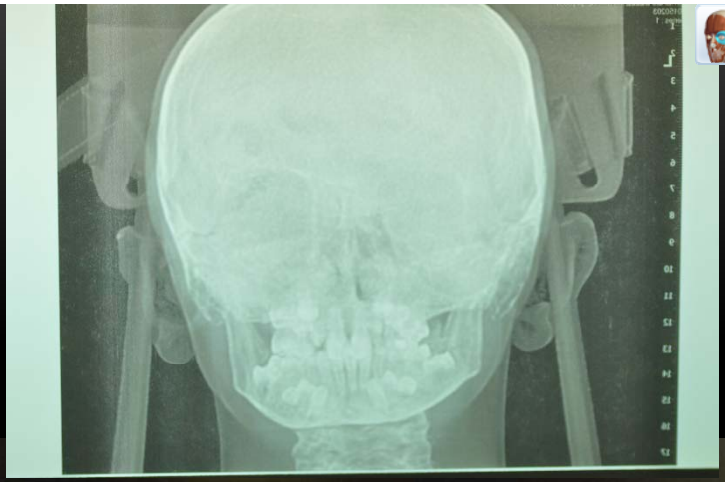


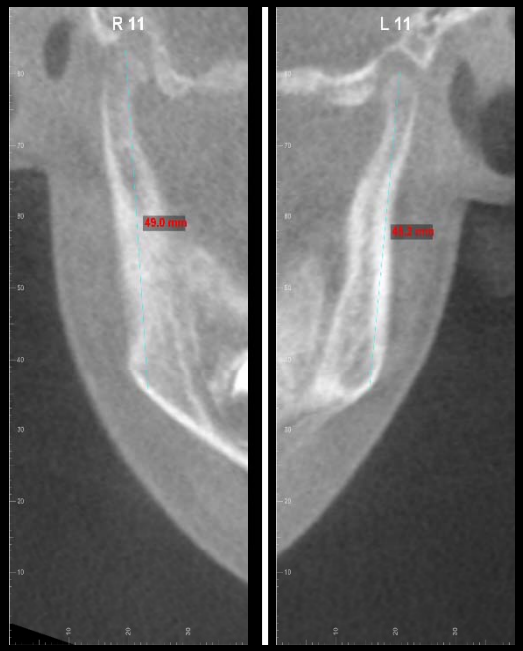
Case 1: Class II, Deep Bite,Right Mandible Ramus Hyperplasia, Frankel Function Regulator

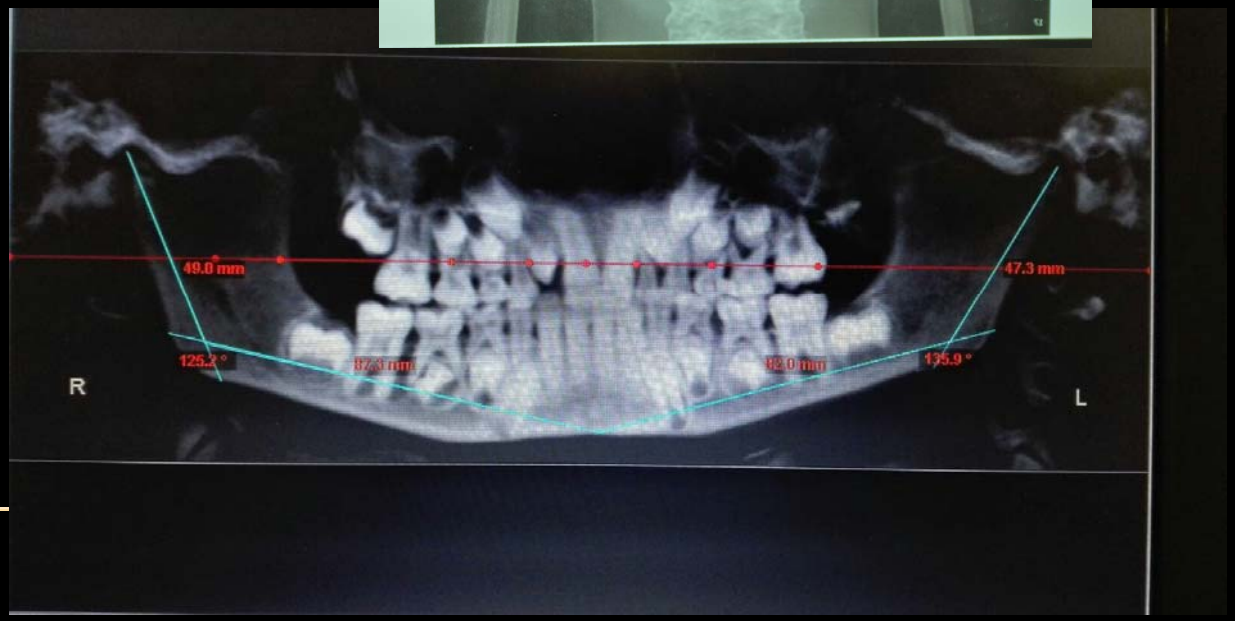
Age:10 years

12 months Frankel Function Regulator

MEASUREMENTS 2015







Frankel Function Regulator

We are faced with a case of hemi mandible HYPERPLASIA that, according to our classification, has a right mandibular branch with increased growth at the bottom, a corner gonial more closed, the right condyle retrusive and higher than the left, and a deviation ipsilateral of the midline

MODIFIED FRANKEL FUNCTION REGULATOR WITH A DISTRACTION SPRING

- The construction bite was taken without providing for the correction of the midline to avoid unwanted condylar displacements and intracapsular diseases

AFTER A YEAR OF TREATMENT

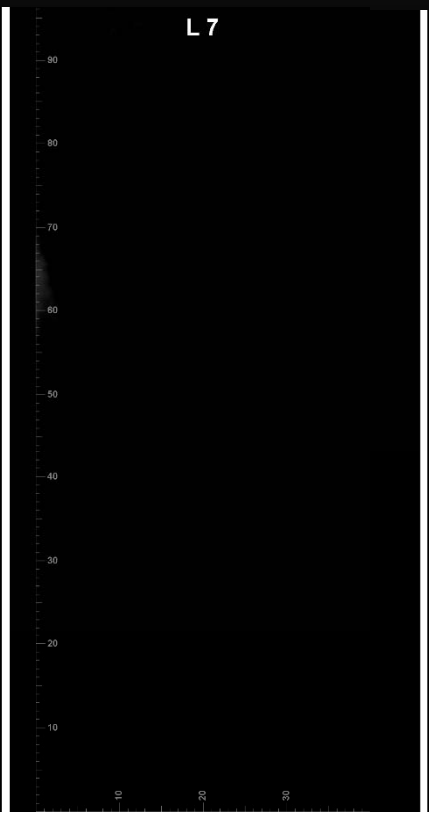


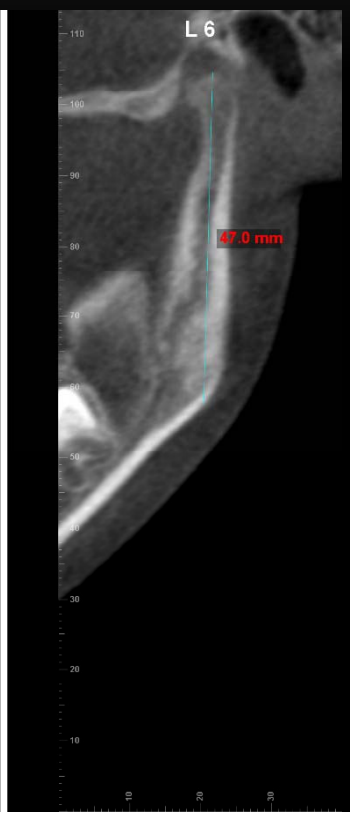



The thesis work was developed by Dr. E. Tamburri

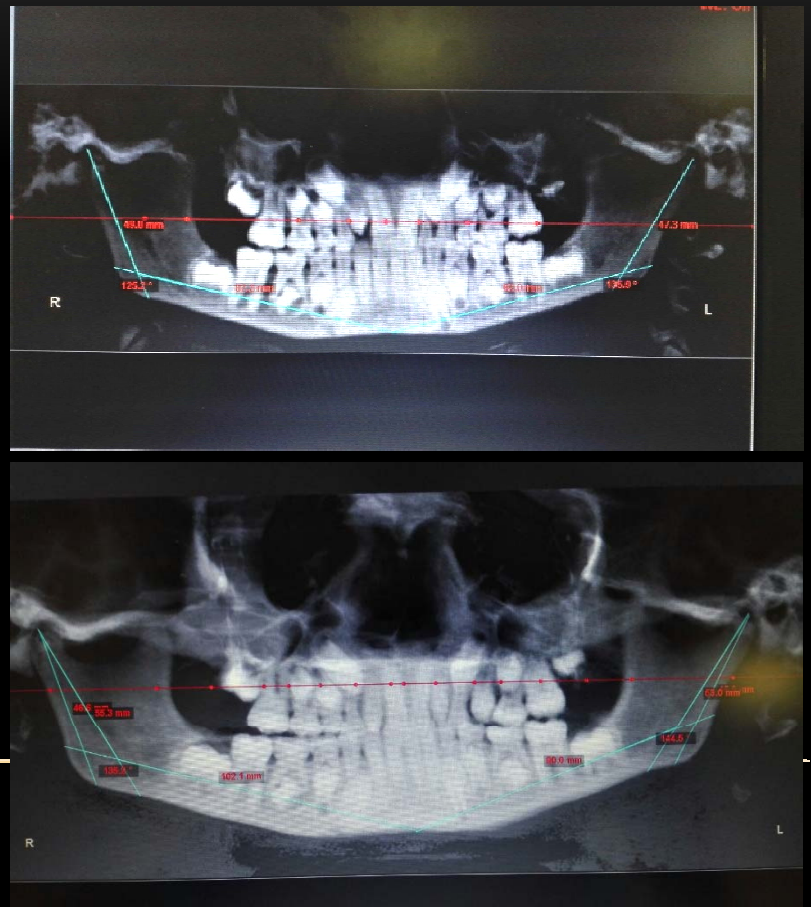
http://www.felicefesta.it/team.html

MANDIBULAR BRANCHES 2016





Pre and post treatment



FRANKEL FUNCTION REGULATOR

- In a year of treatment there were positive results. The left hemimandible has grown more than hypertrophic right
- The vestibular shields along the upper lip bumper have enabled a greater maxillary development, allowing a mandibular anterior translation with a significant improvement in aesthetics and functionality, as well as in the inclination of the upper incisors. Such anterior translation of the jaw has improved the curvature of the cervical spine, which we know to be important for the purposes postural and to avoid the onset of headaches muscle-tensive, limiting the inversions of the column to which it is subject in cases of mandibular retrusion.

ORTHOPAEDIC AND 3D FUNCTIONAL THERAPY

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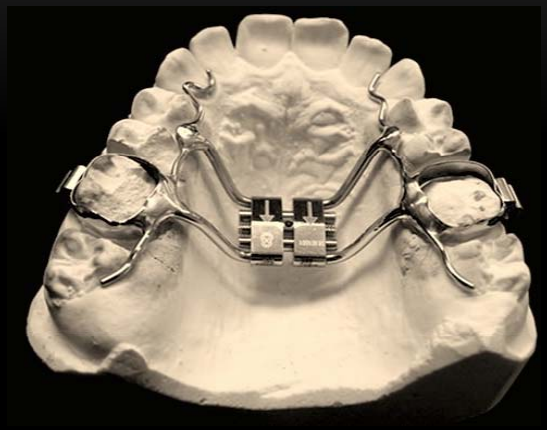
Changing-P®

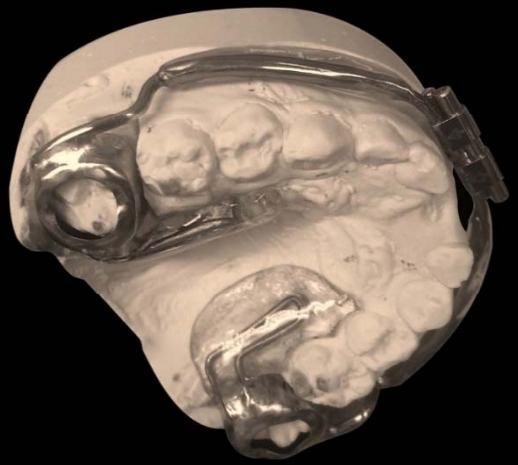
The First Rapid Palatal Expander With Vestibular Approach

In the Department of Orthodontics, University "G. d'Annunzio "of Chieti-Pescara, directed by Prof. Felice Festa, a rapid palatal expander was applied with vestibular approach, denominated Changing-P® by dr. M. Porseo which he patented in June 2013. The thesis work was conducted by Dr. E. Paciaffi.

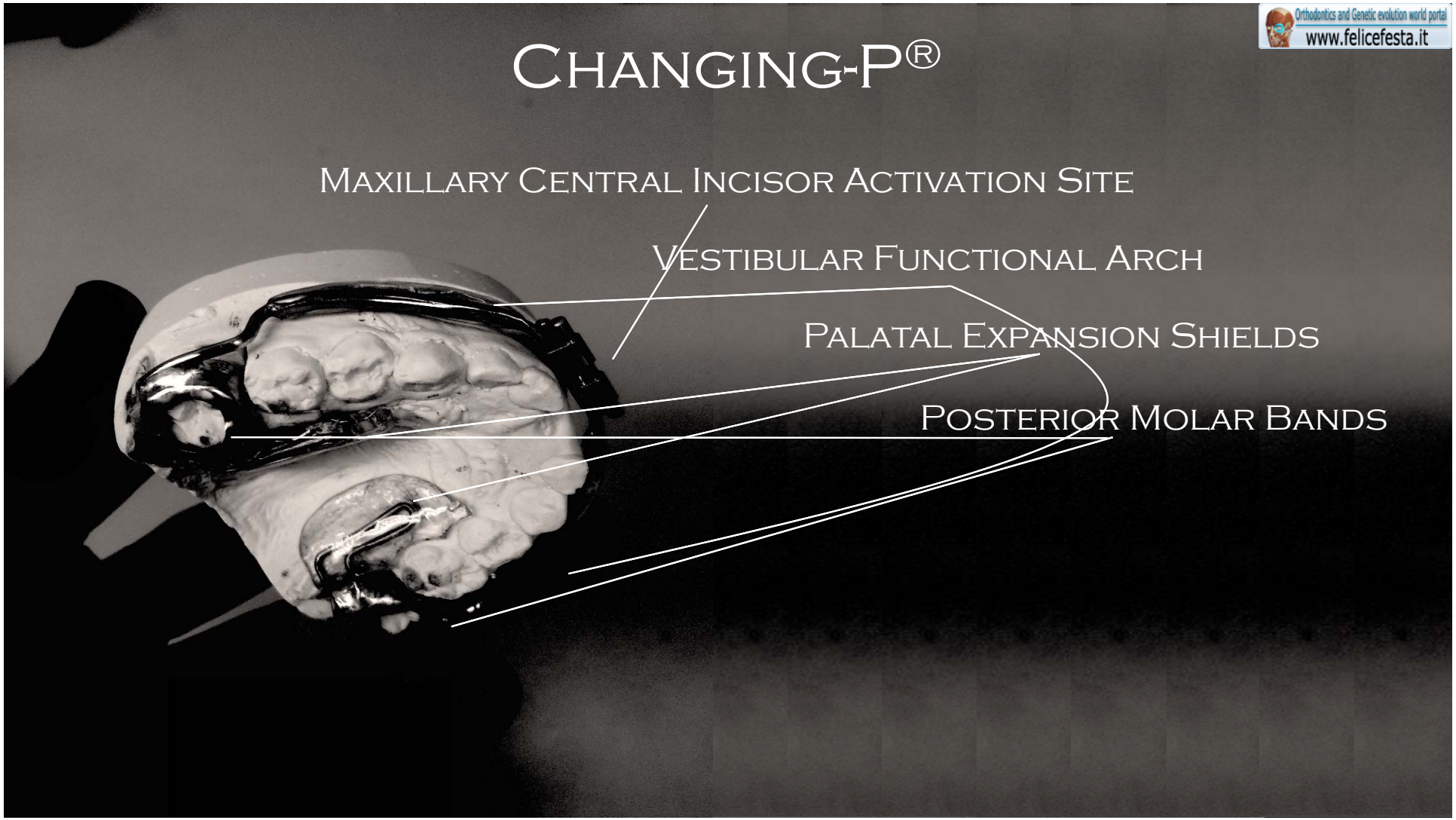
Rapid Palatal Expander
With Palatal Approach



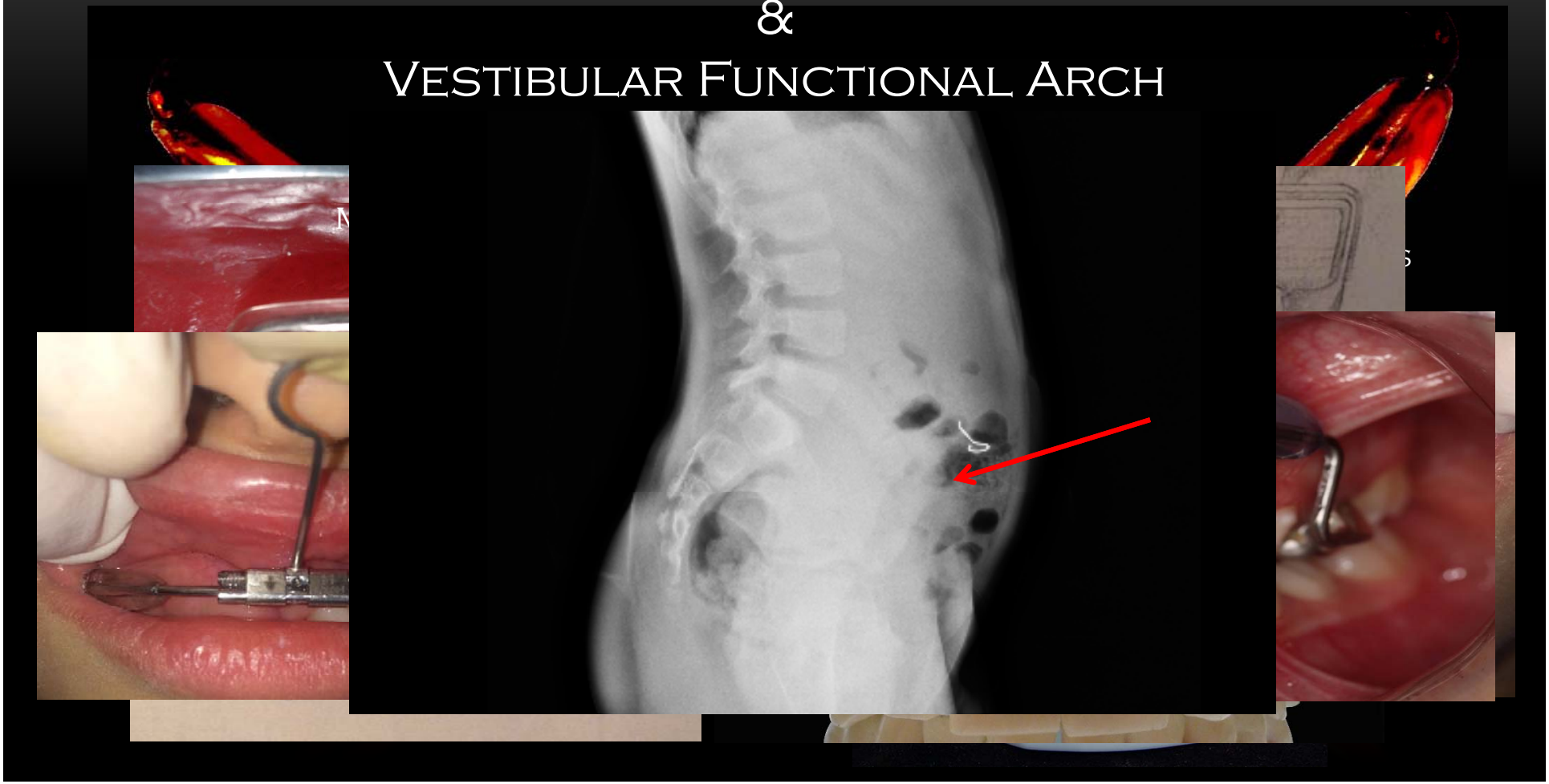
Vs



~~Rapid Palatal Expander~~
With Vestibular Approach


Changing-P®
Maxillary Central Incisor Activation Site
Vestibular Functional Arch
Palatal Expansion Shields
Posterior Molar Bands
Orthodontics and Genetic evolution world portal
www.felicefesta.it

Maxillary Central Incisor Activation Site
&
Vestibular Functional Arch



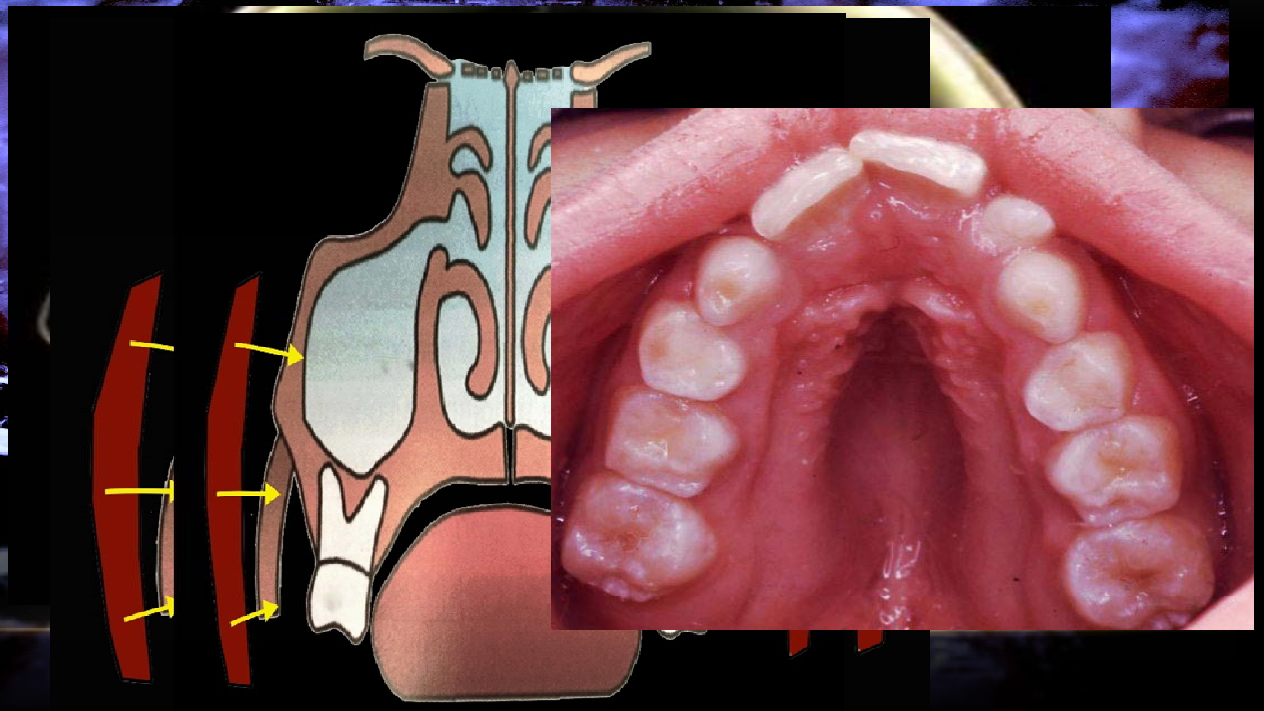
Palatal Expansion Shields

Berwig LC1, Silva AM, Côrrea EC, Moraes AB, Montenegro MM, Ritzel RA. *Hard palate dimensions in nasal and mouth breathers from different etiologies.* J Soc Bras Fonoaudiol. 2011 Dec; 23(4): 308-14.

Harari D1, Redlich M, Miri S, Hamud T, Gross M. *The effect of mouth breathing versus nasal breathing on dentofacial and craniofacial development in orthodontic patients.* Laryngoscope. 2010 Oct; 120(10): 2089-93.

Proffit WR. *Equilibrium theory revisited.* Angle Orthod. 1978 Jul; 48(3): 175-186.

Stefănescu IM1, Zetu I, Rusu M. Effect of adverse oral habits on the development of the dentomaxillary system. Rev Med Chir Soc Med Nat Iasi. 2011 Apr-Jun;115(2):567-71.

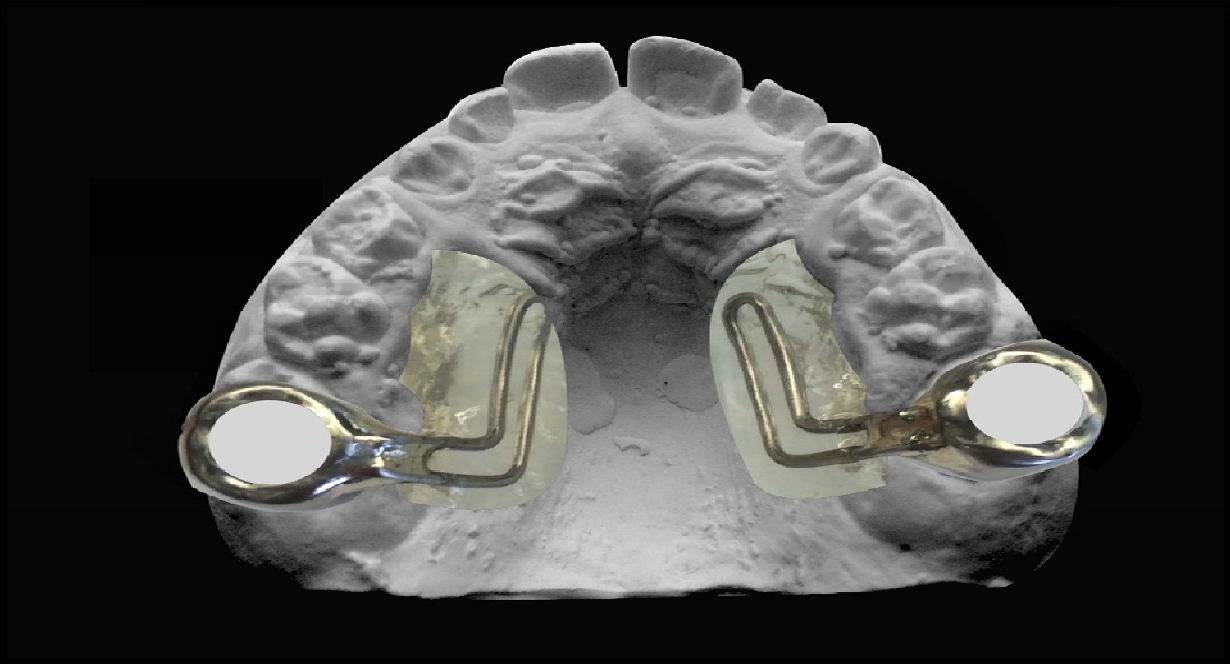


Palatal Expansion Shields

TRANSVERSAL EXPANSION APPLIANCE

Palatal Expansion Shields

Haas Rapid Palatal Expander



Posterior Molar Bands

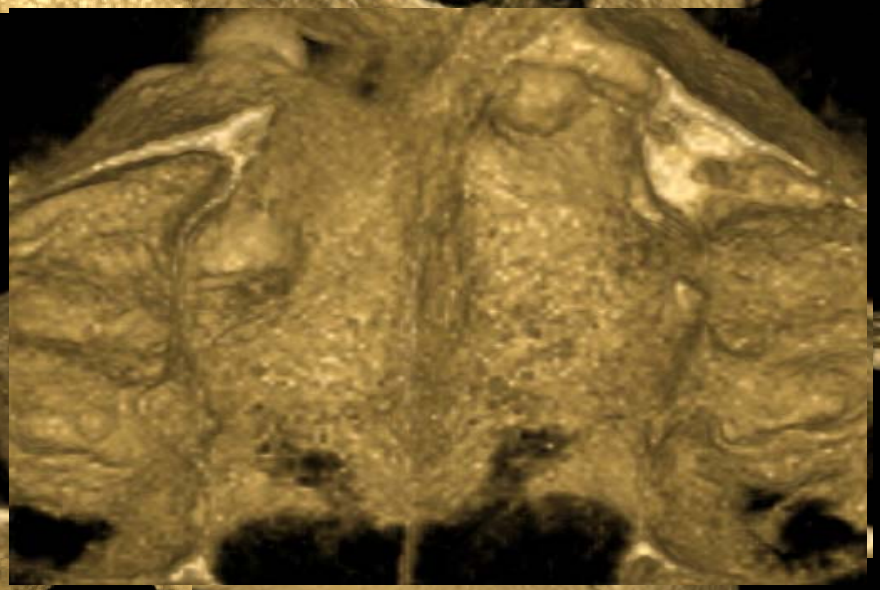
Roll o Bands

THE FIRST CASE

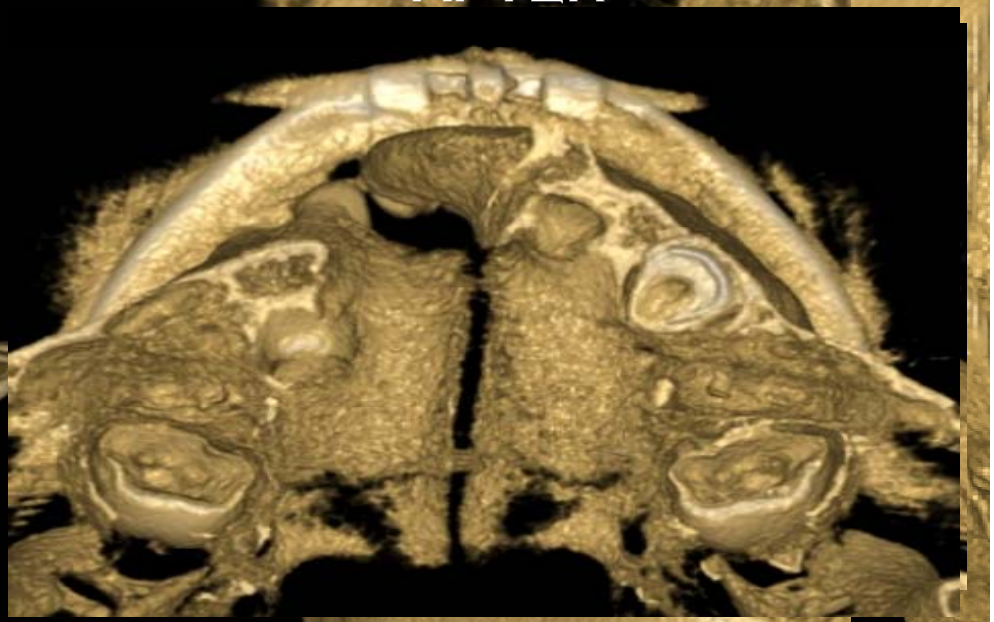
"Does the Changing-P succeed in opening the mid-palatal suture?"

YES, IT DOES!

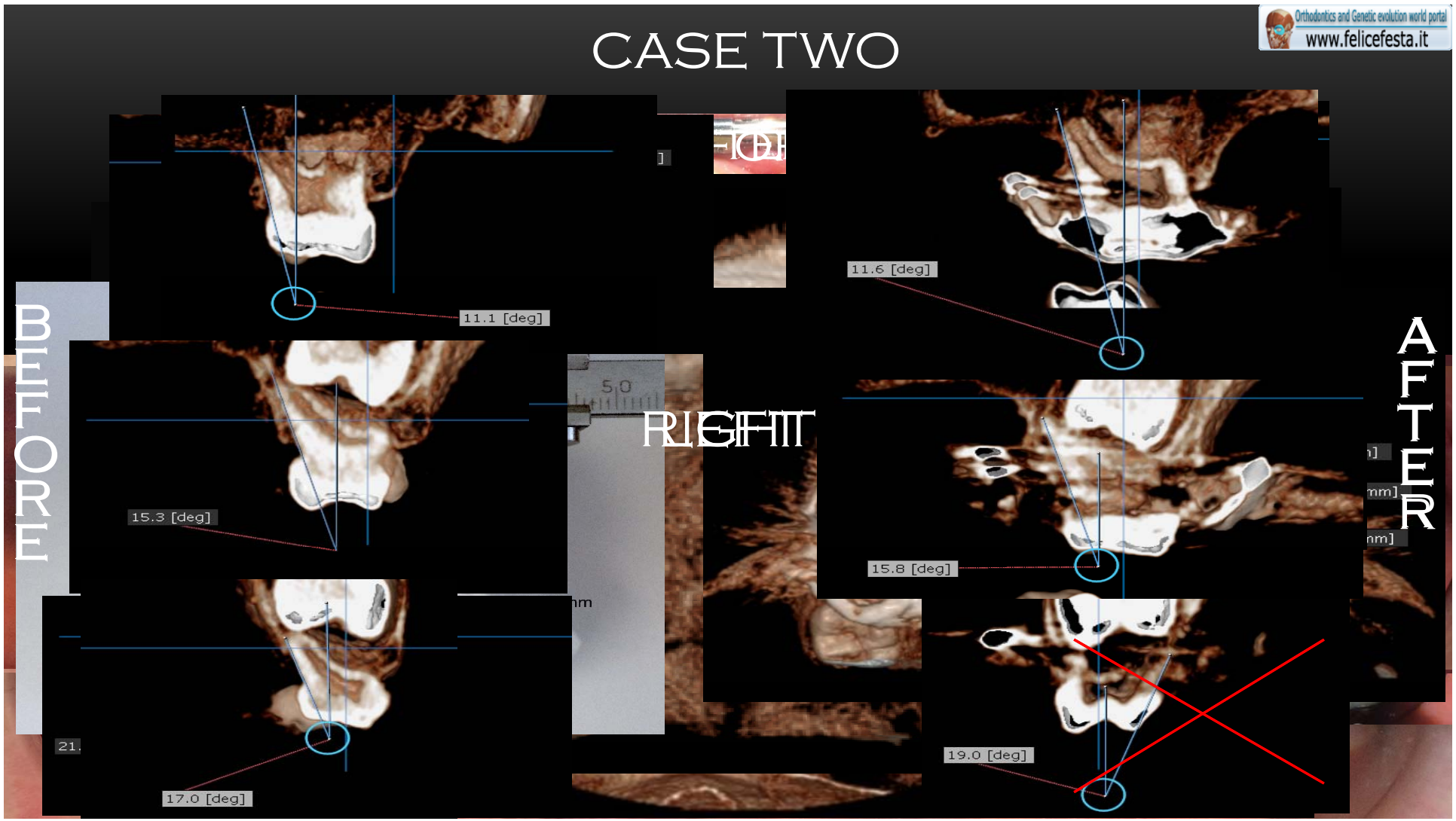
Before



after

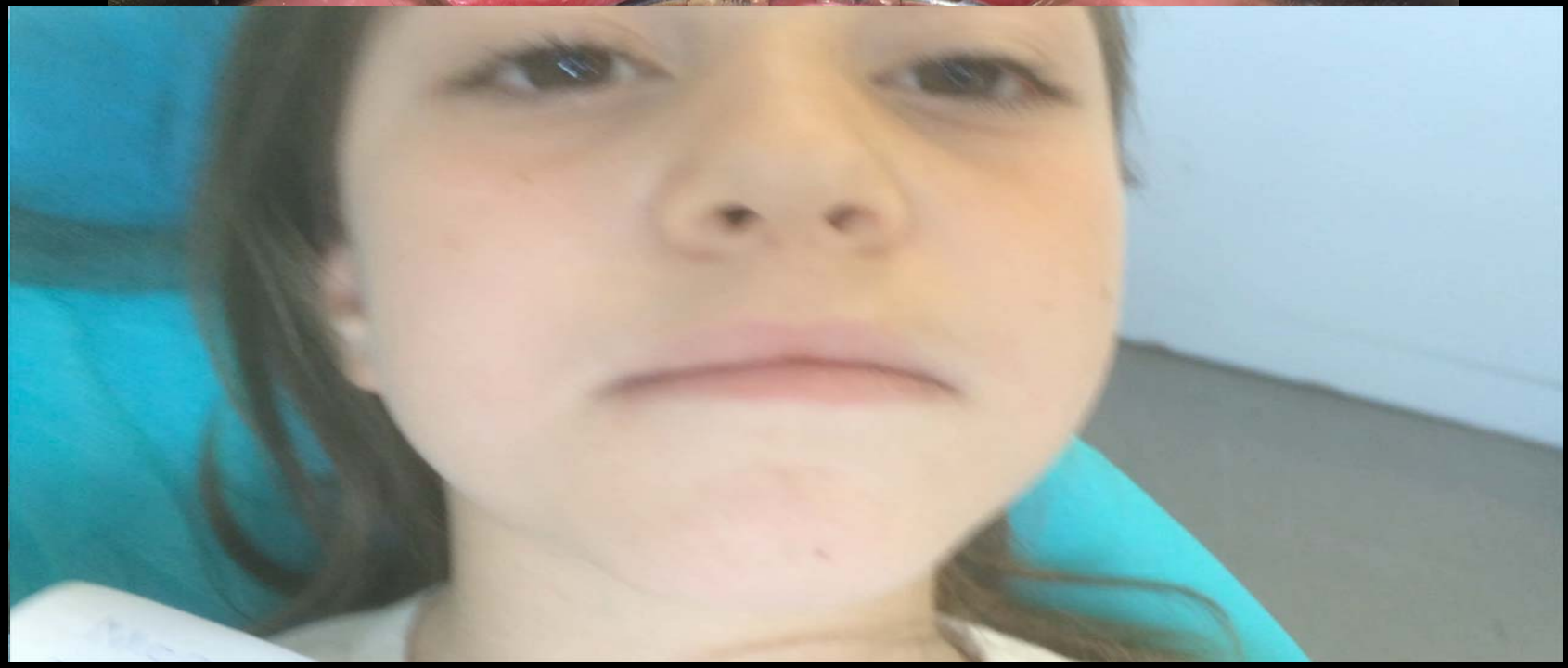


CASE TWO



REDUCTION OF THE PALATAL ENCUMBRANCE

BEFORE



CASE THREE

NO HYPERCORRECTION

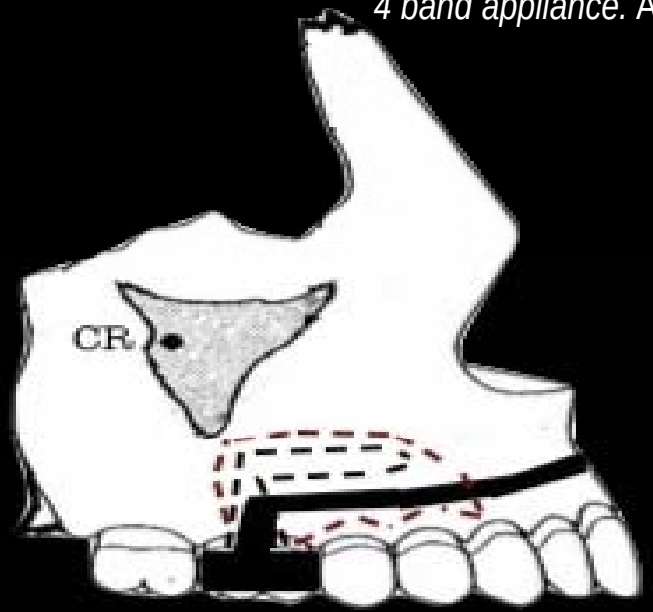
Langford SR, Sims MR. Root surface resorption, repair, and periodontal attachment following rapid maxillary

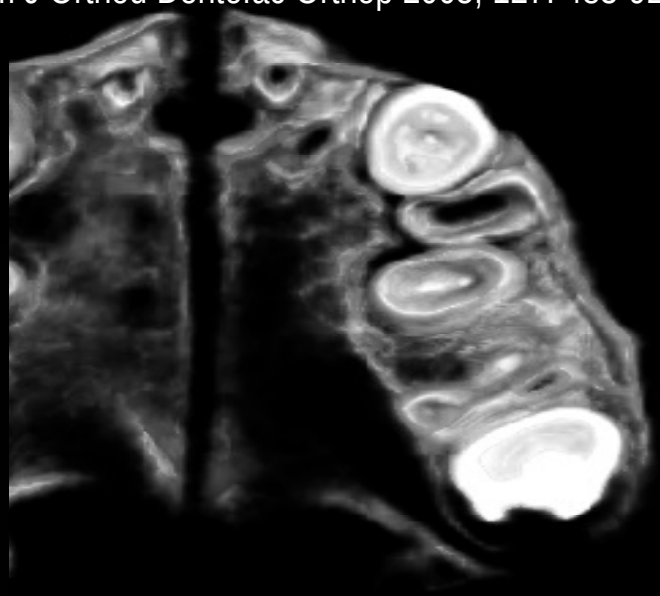
Baysal A, Kara pid maxillary expansion usir tomography. A

Barber AF, Sim n: a scanning electron microscope study. Am J Orthod. 1981; 79:630–652.

“In order to provide a completely uniform opening it is necessary a surgical distraction of the pterygomaxillary process”

Davidovitch M, Efstathiou S, Sarne O, Vardimon AD. *Skeletal and dental response to rapid maxillary expansion with 2 vs. 4 band appliance.* Am J Orthod Dentofac Orthop 2005; 127: 483-92.



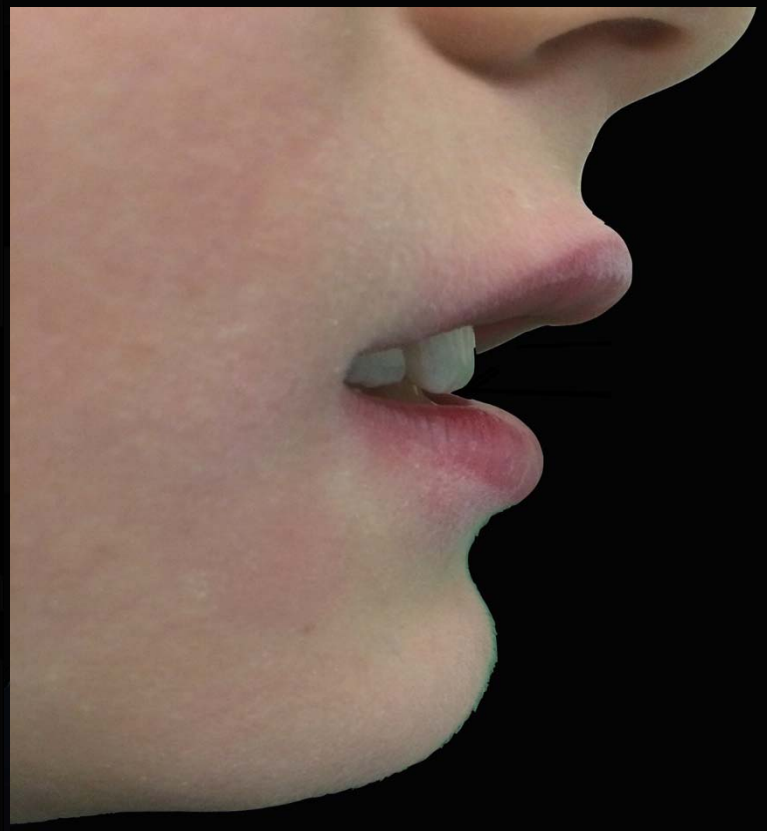


Papadopoulos MA, Christou PK. *Centers of resistance of the maxillary complex: Theoretical models and practical applications in orthodontics.* Hellenic Orthodontic Review 2000;3(1)35-51

CASE FIVE

ESTHETIC IMPACT

BEFORE



AFTER

J C O
February 2016 Issue

A Vestibular Rapid Palatal Expander

MAURO PORSEO, DDS
BARBARA MONACO, DDS
FELICE FESTA, DDS
GIANLUIGI FIORILLO, DDS

Various types of rapid maxillary expanders have been introduced; while they all have their advantages and disadvantages, each is built around an expansion screw in the palatal area. This article describes a different approach to the orthopedic treatment of a maxilla with transverse bone deficiency. A vestibular expander called the Changing-P was developed to address some of the drawbacks of traditional expanders and to optimize the disjunctive action of the appliance during its entire period of use in the oral cavity.

Appliance Design

The Changing-P is a rapid maxillary expander with the activation system placed in the vestibule at the incisal level. An expansion screw that turns in opposing helical directions is connected to two .059" stainless steel arms, which follow the curve of the upper alveolar ridge and are welded to the gingival third of the first permanent or second deciduous molar bands (Fig. 1A). The buccal arms are covered with acrylic bumpers; these should not contact the mucosa, but will exert a significant pressure-relieving and muscle-shielding action that prevents pressure sores from developing. They also make the appliance more rigid and efficient during activation. Two acrylic shields with metal frames are extended from the palatal surfaces of the molar bands to the canine region and from the gingival margin toward the palatal raphe, with a clearance of about 3mm from the gingival margin and 10mm from the palatal raphe (Fig. 1B).

Because traditional orthodontic bands have a tendency to deform during installation and activation, we use Rollo® bands, which are more rigid and occlusally extended. This allows the palatal shields to maintain proper contact with the mucous membranes without creating gaps that would allow the accumulation of food residue, and without causing excessive pressure or irritation.

®Trademark of American Orthodontics, Sheboygan, WI; www.americanortho.com.

Dr. Porseo Dr. Monaco Dr. Festa Dr. Fiorillo

Dr. Porseo is Medical Director, Studio Porseo Dental Centre, 2 Via Giovanbattista Simoncelli, 03022 Boville Ernica, Frosinone, Italy, and the inventor and patent owner of the appliance described in this article; e-mail: mauroporseo@studioporseo.it. Dr. Monaco is Chief Physician, Paediatric Dentistry Division, San Camillo Hospital of Rome, and in the private practice of orthodontics in Rome. Dr. Festa is a Professor of Orthodontics and Gnathology and Director of the Graduate School of Orthodontics, and Dr. Fiorillo is a Visiting Professor of Orthodontics, Gabriele d'Annunzio University of Chieti-Pescara, Italy. Dr. Fiorillo is also in the private practice of orthodontics in Rome.

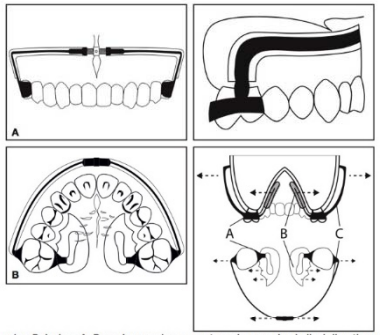


Fig. 1 Changing-P design. A. Buccal expansion screw turns in opposing helical directions; two .059" stainless steel arms, coated with acrylic bumpers, connect screw to upper first permanent or second deciduous molar bands. B. Acrylic shields with metal frames extend from palatal surfaces of molar bands to canine region and from gingival margin toward palatal raphe (A = Rollo® bands, B = palatal shields, C = buccal arch).

ORTHOPAEDIC AND 3D FUNCTIONAL THERAPY

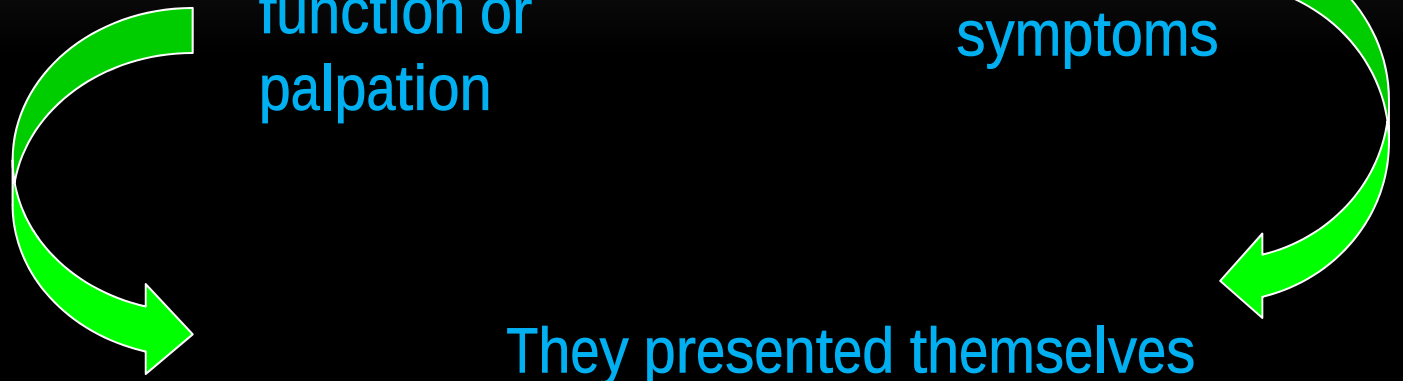
- Frankel Function Regulator
- Expansion cases in 2D and 3D / Changing-P
- TMD in children

TMD in children

In 1989, two conferences were held concerning the temporomandibular disorders in Children. Dr. Jeffrey Okeson defined the TMDs as all disorders related to the function of the masticatory system.

The intention was to highlight that the TMDs are found in children and adolescents, as much as in adults.

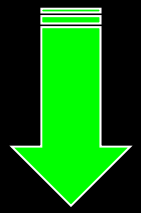
- ✓ Okeson JP:Temporomandibular disorders in children.Pediatric Dent 1989;11:325-329
- ✓ American Academy of Pediatric Dentistry:Treatment of temporomandibular disorders in children:Summary statements and recommendations.JADA 1990;120:265-269
- ✓ President's Conference on the Examination,Diagnosis and Management of Temporomandibular Disorders. JADA 1983;106:75
- ✓ Padamsee M . et al.: Functional disorders of the stomatognathic system Part II .J Pedodont 1985;10:1-21



- ✓ Helkimo M : Epidemiological surveys of dysfunction of the masticatory system . In Zarb GA, Carlsson GE (eds), Temporomandibular Joint Function and Disfunction. Copenhagen: Munksgaard 1979; 175-192

TMD in children

There is objective presence of signs and symptoms in about 40% of children and adolescents.

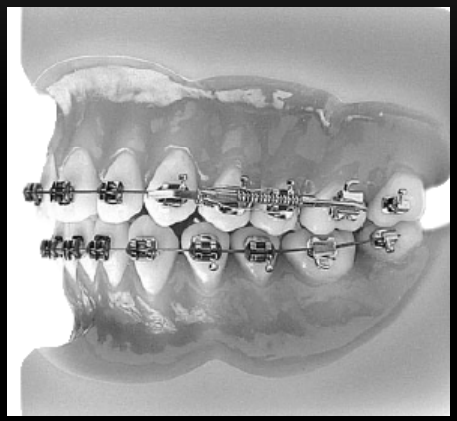


Of these, only 5% requires a treatment.

- ✓ Bureau of the Census: Current Population Reports: Projections of the Population of States by Age, Sex, Race: 1988 to 2010. Series P-25 ,No. 1017. Washington, D. C.: Government Printing O ffice, 1988

TMD

Orthodontic treatment



Occlusion

✓ Sadowsky C. The risk of orthodontic treatment for producing temporomandibular disorders: a literature review. Am J Orthod Dentofac Orthop 1992; 101: 79-83.

What factors are associated with TMDs?

The factors of the TMJ dysfunction in children and adolescents as well as adults is considered multifactorial, in this aetiology these factors can be found :

- Eating habits
- Trauma
- Malocclusions
- Neuromuscular disorders
- Particular emotional states

The potential confusions in determining the characteristics of craniomandibular disorders shows that:

The TMJ disorders are not a single disorder, but rather the classification of a number of diseases that can affect different tissues within the TMJ and structures associated with it.

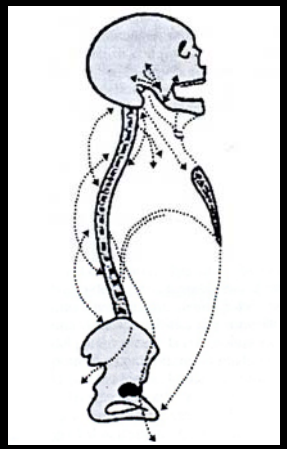
In the large classification of disorders there is no consensus about what is the best diagnostic approach. This often leads to disagreements about the aetiology and what are the affected tissues.

The TMDs must be understood in the context of growth and adaptive responses of cells and tissues that make up the TMJ and the masticatory system.

- Orthodontic treatment can not be a form of prevention but rather alleviate withdrawal symptoms once they occur.
- An important question is the possibility that orthodontic treatment will lead to a greater incidence of temporomandibular disorders.
- The literature provides support to the theory that in general orthodontic treatment during adolescence does not increase or decrease the risk of developing the temporomandibular disorders later in life.

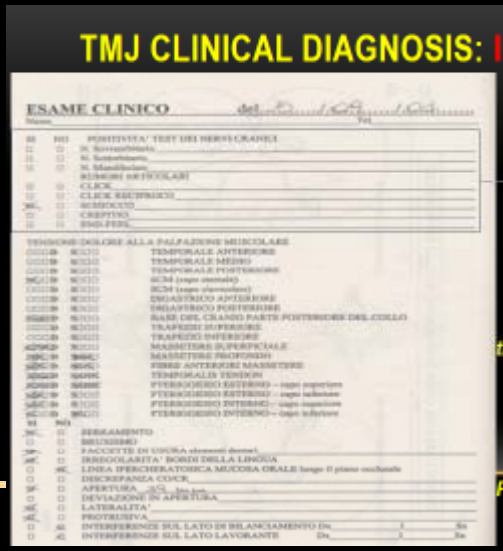
- Sadowsky C. The risk of orthodontic treatment for producing temporomandibular disorders: a literature review. Am J Orthod Dentofac Orthop 1992; 101: 79-83.

General neuromuscular disorders can affect the neck area and shoulders, as well as more distant districts.



The prognostic value of the signs and symptoms.

To prevent or treat temporomandibular dysfunction a splint therapy in combination with gymnastics can be implemented



TMJ CLINICAL DIAGNOSIS: INTRAARTICULAR

EXTRAARTICULAR

TMJ CLICKING 20%

LOCKING

the splint therapy. These splints force the mandible to an anterior position for 24 hours a day. This therapy is associated to physical therapy, spray and stretch technique and biofeedback. Once the symptoms are reduced the clinician can go on to the second step.

Phisical therapy. Tongue exercises+ spine exercises . 6 months

Thank You

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http://www.felicefesta.it/team.html#monicateam