



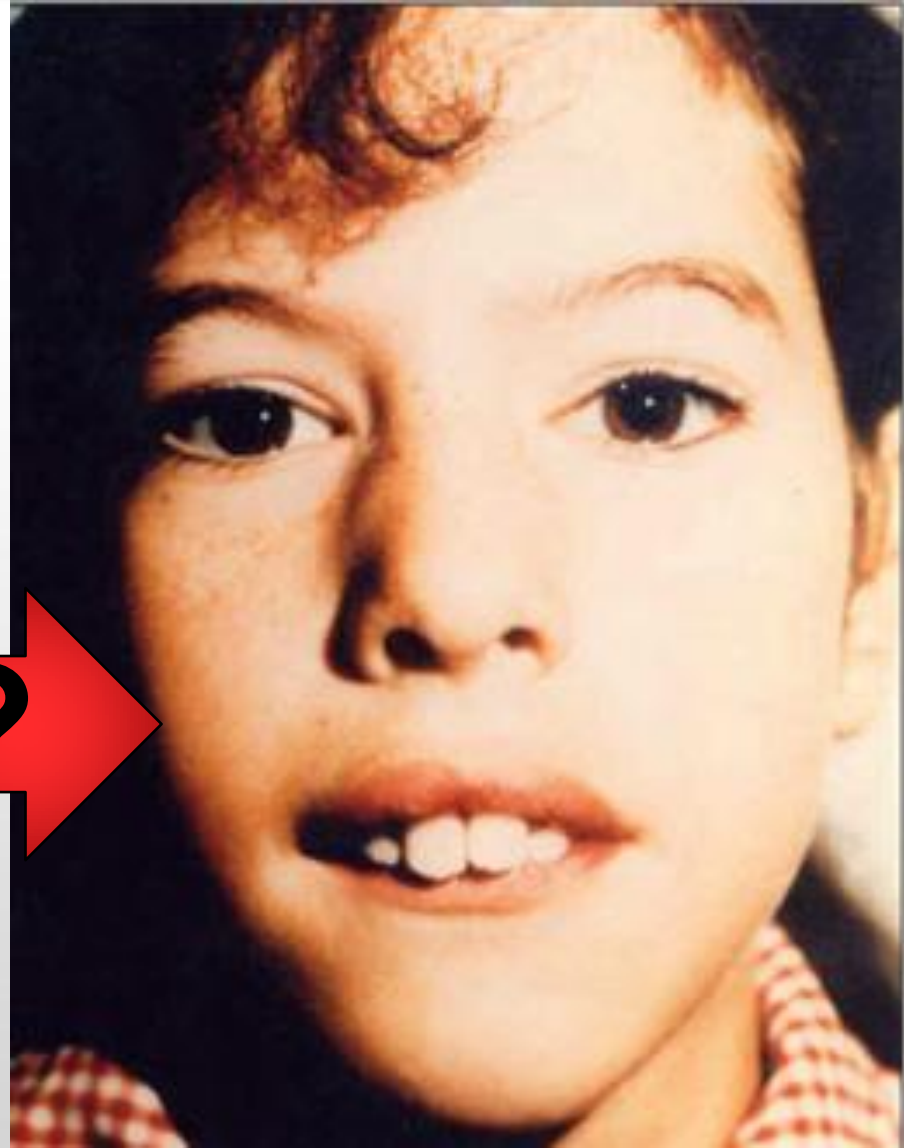
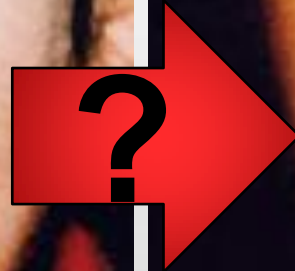
**Regional Center of Allergy and Clinical  
Immunology**  
**University Hospital "Dr. José Eleuterio González"**



# Allergic Rhinitis and Oral Malocclusion in Children



**Claudia I. Gallego Corella, MD**



# Allergic Rhinitis

- The 4 cardinal symptoms of nasal reaction to occur in response to allergy are :

- Sneezing
- Runny nose / back
- Nasal obstruction
- Nasal itching



**Obstruction of upper airway**



**Mouth breathing**

**The oral breathing syndrome occurs when the patient substitutes the correct pattern of breathing due to nasal obstruction \***



\*Díaz-Morell JE, Fariñas-Cordón MM, Pelletero-Reyes BL, Álvarez-Infantes E. La respiración bucal y su efecto sobre la morfología dentomaxilofacial. *Corr Cient Med Holg* 2005;9:1-7.

## MOTONAGA et al. (2000)

- Investigated the causes and alterations in the stomatognathic system of oral breathing children and concluded that ***allergic rhinitis*** was among the most frequent causes



# Prevalence of oral breathing

- **Variability between studies from 5% to 75%**



Frecuencia de malos hábitos orales y su asociación con el desarrollo de anomalías dentomaxilares en niños de **3 a 6 años** en el área oriente de Santiago. Agurto P, et al. Rev. Chil. Pediatr. V.70 n.6 nov.1999

**15%**

Barrios-Felipe L, Puente-Benítez M, Castillo-Coto A, Rodríguez-Carpio MA y col. Hábito de respiración bucal en niños. Rev Cubana Ortod 2001;16:47-53.

**24.7%**

Treviño-Salinas, Muñoz-Mendoza, González-Díaz, Arias-Cruz, Chapa-Rodríguez, Rodríguez-Ortiz. Prevalencia de respiración oral y su efecto en el desempeño escolar en niños con alergia respiratoria. Medicina Universitaria 2009;11(42):17-21

**29%**

6

Year

11



# Categorization of patients with allergic rhinitis: a comparative profile of “sneezers and runners” and “blockers”

Puneet Khanna, MD, and Ashok Shah, MD india

2005;94:60–64

ANNALS OF  
Allergy, Asthma  
& Immunology

Table 1. Comparative Clinical Profile of “Sneezers and Runners” and “Blockers”\*

Variable	“Sneezers and runners”	“Blockers”	Total
Total patients	72 (63)	42 (37)	114
Male	40 (56)	23 (55)	63 (55)
Female	32 (44)	19 (45)	51 (45)
Mean age, y	24.3	28.2	25.7
Mean age at onset, y	15.4	19.7	17
Age at onset of disease < 20 y	65 (90)†	19 (45)	84 (74)
First born	29 (40)	14 (33)	43 (38)
Born between June and September	44 (61)†	11 (26)	55 (48)
Family history of atopy	63 (88)†	18 (43)	81 (71)
Eye itching	65 (90)†	15 (36)	80 (70)
Throat and palate itching	48 (67)†	13 (31)	61 (54)
Ear itching	31 (43)†	7 (17)	38 (33)
Skin itching	19 (26)†	3 (7)	22 (19)
Breathlessness	35 (49)	38 (90)†	73 (64)
Mouth breathing	31 (43)	34 (81)†	65 (57)
Prior nasal surgery	6 (8)	13 (31)†	19 (17)
Loss of sense of smell	10 (14)	15 (36)†	25 (22)
Affected by dust	67 (93)†	20 (48)	87 (76)
Affected by vehicular smoke	62 (86)	31 (74)	93 (82)
Food or drug allergy	9 (13)	3 (7)	12 (11)
Exposure to ETS	30 (42)	21 (50)	51 (45)
Affected by ETS	24/30 (80)	15/21 (71)	39/51 (76)
GERD	24 (33)	19 (45)	43 (38)
Psychological factors	9 (21)	5 (7)	14 (12)



Contents lists available at ScienceDirect

## International Journal of Pediatric Otorhinolaryngology

journal homepage: [www.elsevier.com/locate/ijporl](http://www.elsevier.com/locate/ijporl)



### Prevalence of malocclusion among mouth breathing children: Do expectations meet reality?

Bernardo Q. Souki<sup>a,b,\*</sup>, Giovana B. Pimenta<sup>a</sup>, Marcelo Q. Souki<sup>a</sup>, Leticia P. Franco<sup>a</sup>, Helena M.G. Becker<sup>a</sup>, Jorge A. Pinto<sup>a</sup>

<sup>a</sup> Federal University of Minas Gerais, Outpatient Clinic for Mouth-Breathers, Belo Horizonte, Brazil

<sup>b</sup> Catholic University of Minas Gerais, School of Dentistry, Orthodontics, Belo Horizonte, Brazil

401 patients

2 to 12 y

Evaluated by otolaryngologist  
allergist, orthodontist  
Presence of oral breathing  
malocclusion

adenoidal hypertrophy  
c / s RA: 71%

**AR: 18%**

**Non-obstructive  
mouth breathing : 9.5%**

**Posterior crossbite: 48%**

**Malocclusion : 46%**

**Children  
allergic  
rhinitis**

**They have a  
high frequency  
of oral breathing**

**Presence of alterations  
dentomaxilofaciales**





# Mouth breathing and its effect on the morphology dentomaxilofaciales

Downward position or low tongue

Lose internal support for tooth

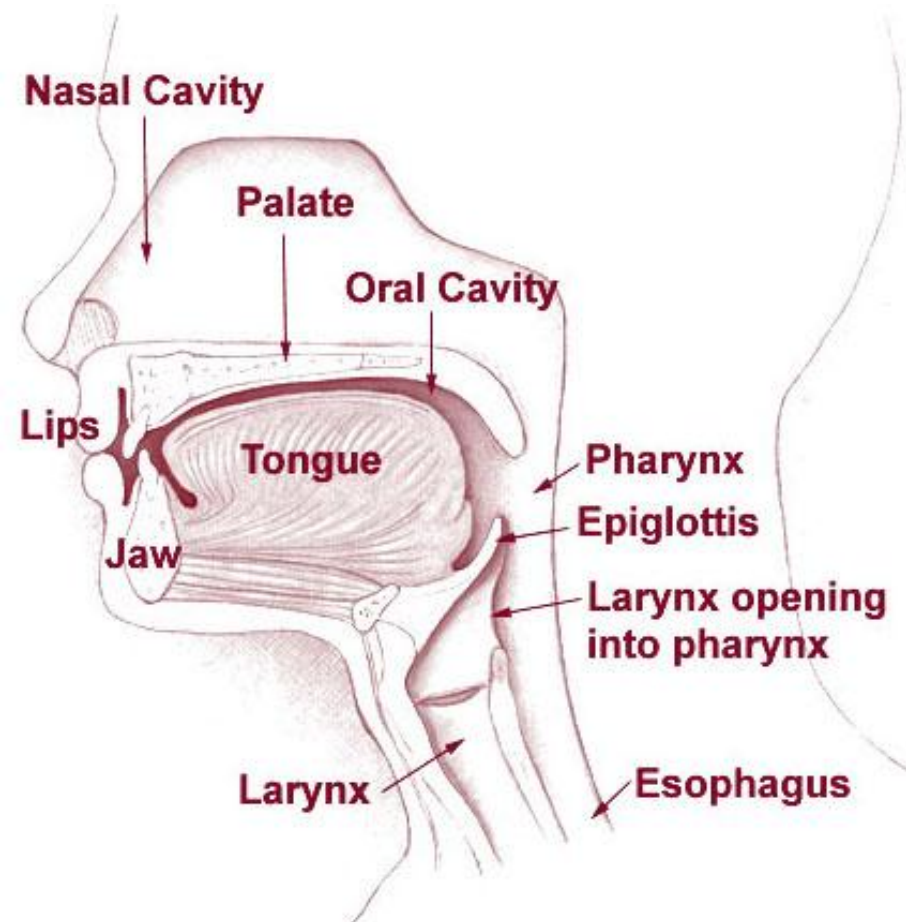
Lack of transverse development of the jaw (maxilla compression)

Lack of shaping of the palate

Contraction of the palate (high arched)

The oral musculature rests unopposed

Alteration occipito-cervical angle (posture of the head extended back)



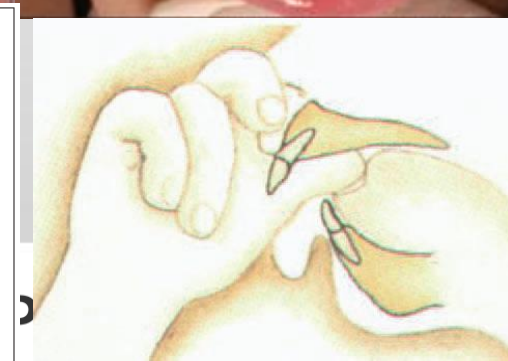
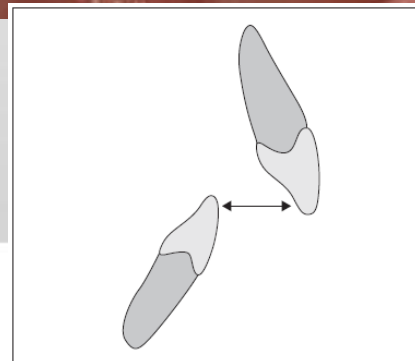


Figura 1. Esquema del aumento del resalte.

# Maxillofacial development impact

- Hypoplastic maxilla
- Maxillary sinus hypodevelopment
- Constriction of the upper dental arch (high palate)
- neuromuscular disorders
- Lack of transverse development of maxillary
- Incisive protrusion and / or crowding
- Mandibular prognathism
- Increase in lower facial height

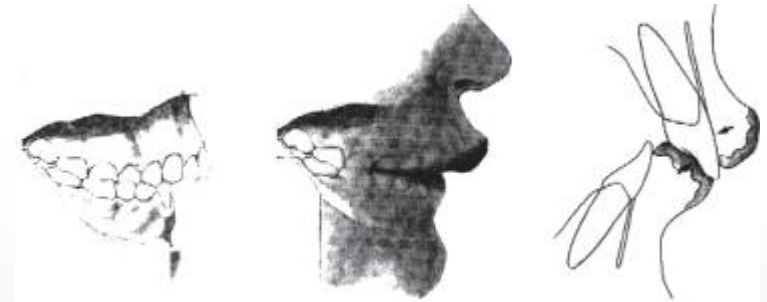


Figura 1. Foto extraoral frontal inicial de la paciente

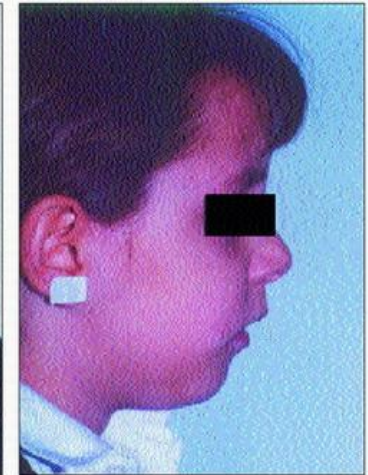


Figura 2. Foto extraoral lateral inicial de la paciente

# Clinical features in a patient oral oral breathing



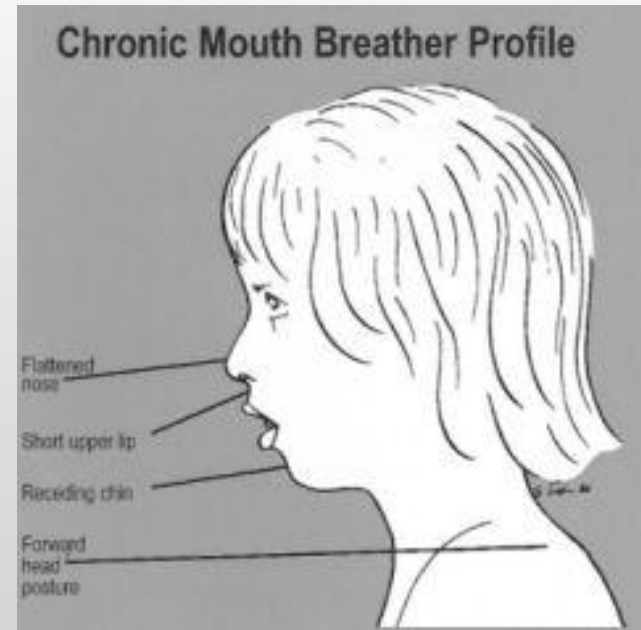
**Mouth breathing: Adverse effects on facial growth, health, academics, and behavior**

By Yosh Jefferson, DMD, MAGD Featured in *General Dentistry*, January/February 2010 Pg. 18-25

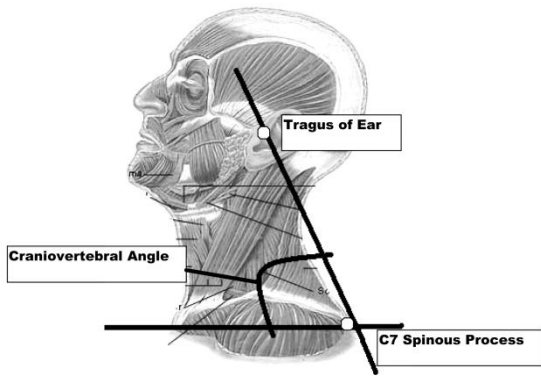
## Bresolin et al.

The nasal airway obstruction with oral respiration during critical periods of growth in children produces a disproportionate increase in lower vertical facial height

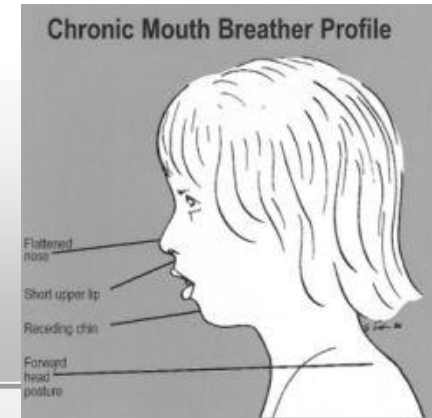
- Allergic children with mouth breathing have a long, narrow facies accompanied by retrognathia when compared with controls



# Craniocervical posture and hyoid bone position in children with mild and moderate asthma and mouth breathing

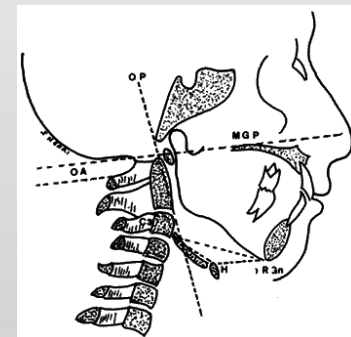


56 children  
28 asthma  
28 health control  
9 -15 y



## Results:

- The craniovertebral angle (CVA) was found to be significantly lower in asthma than in control children (106 vs 111,  $P=0.02$ )
- The hyoid absent or reversed triangle was found to be significantly higher (36% vs 7%,  $p = 0.0001$ )



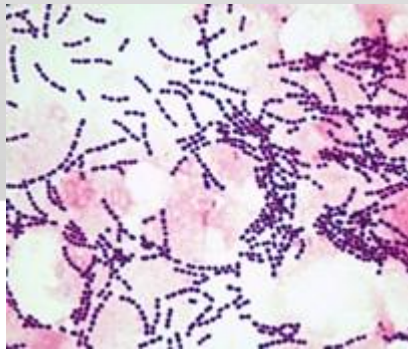
## Lip incompetence and psychosocial effects: A pilot study

deOliveira, D.S.F.; Atherino, C.C.T.; Cervasio, M.R.; Cruz, G.D.; Cervasio, O.R.; Bruggeman, H.; Cornelis, L.; Haspeslagh, L.; VanBorsel, J. LARYNGOSCOPE . 2007. Vol. 117 Nr. 7 Página: 1245 – 1250.



## Atypical streptococcal infection of gingiva associated with chronic mouth breathing

Haytac, M.C.; Oz, I.A. QUINTESSENCE INTERNATIONAL. 2007 Vol. 38 Nr. 10 Página: 577 – 582.



# Other disorders related to mouth breathing

- Sleep disorders
- Daytime sleepiness
- Lower academic performance
- Fatigue during physical activities
  - Neck or back pain
- Disturbances of taste and smell
  - Halitosis, dry mouth
  - Susceptibility to infections
    - Snore
  - Breast apnea



# Conclusions

- Children with allergic rhinitis have alterations in upper airway
- Conditioning nasal obstruction and consequent mouth breathing
- It is important to evaluate all patients with allergic rhinitis w/or asthma, especially children, to carry out early diagnosis and comprehensive treatment of the anomalies dentomaxilofaciales
- Joint management with pediatrician, allergist, ENT, dental and pediatric orthodontics, physical rehabilitation, psychology

## Research

Dentomaxilofaciales changes in children with allergic rhinitis who come to consult the Regional Center of Allergy and Clinical Immunology, University Hospital "Dr. Jose Eleuterio Gonzalez"

**A comparative, prospective, blinded, case-control study**



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