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# GROWTH AND DEVELOPMENT

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In order to develop an individual growth forecast in normal subjects and those with dento-maxillary anomalies, it is necessary to understand very well the general concepts of growth and development of the stomatognathic system → in order to "operate" decipher the complexity of growth trends.

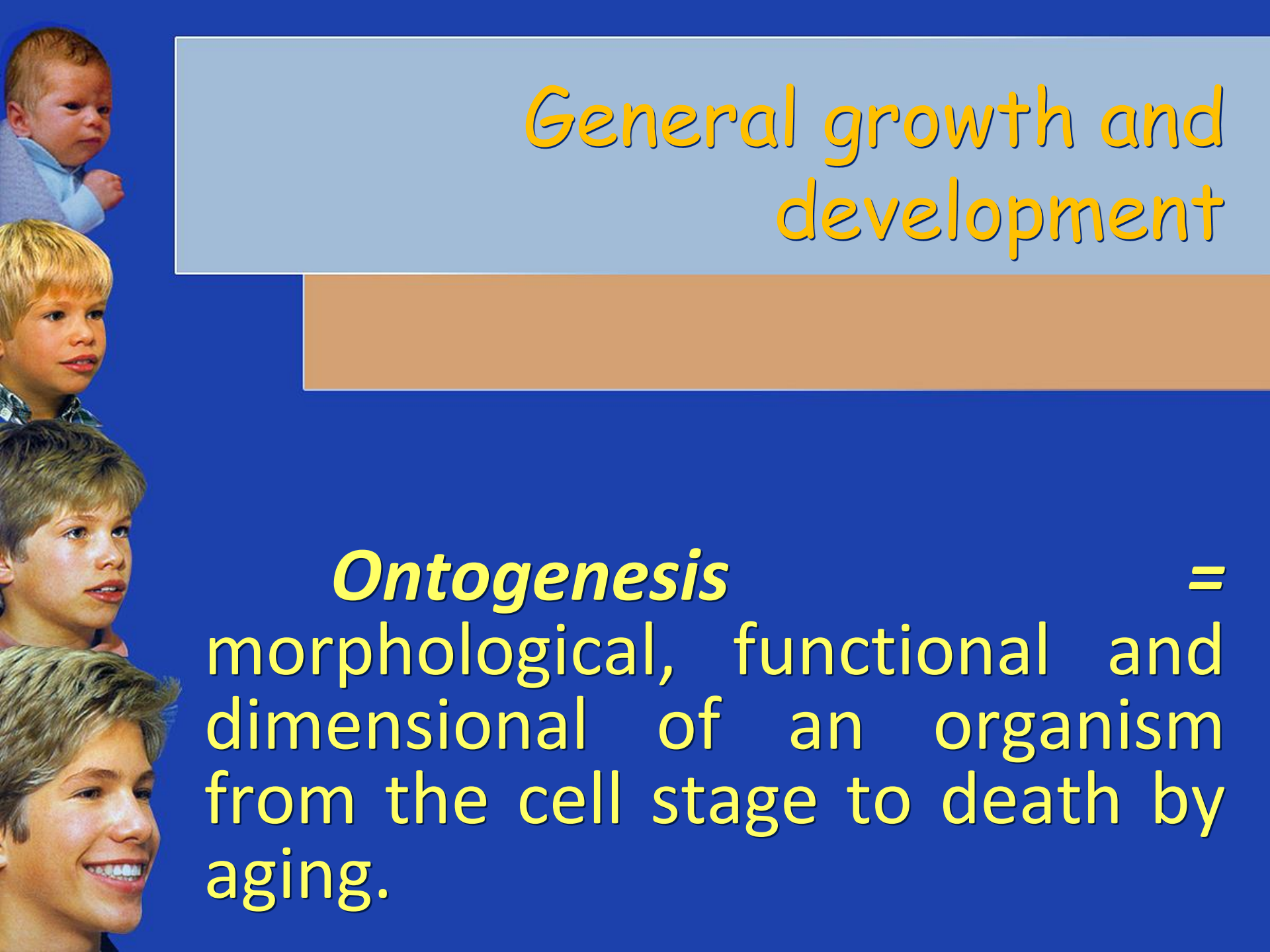


# General growth and development

*Somatic and psychic growth and development* = biological processes of augmentation, structural and functional, processes responsible for evolution from the fertilized egg to the adult organism.

*Growth* – dominated by genetic factors → increase in volume of a tissue, organ or individual.

*Development* – controlled by genetic, neuroendocrine, dietary and functional factors.



# General growth and development

***Ontogenesis*** =  
morphological, functional and  
dimensional of an organism  
from the cell stage to death by  
aging.



# General growth and development

## Stages of ontogenesis:

- *organogenesis*: a. Egg stage (0-2 weeks)  
b. Embryonic period (2-8 weeks);
- *morphogenesis*: a. Fetal period (week 9-birth)  
b. Postnatal period until adolescence (~ 21 years);
- *modeling*: from 16 years-death.





# Cranio-facial growth and development

Development of stomatognathic system after birth → genetics.

The development scheme of each element of the stomatognathic system, from a certain subject, can be known “grosso modo” from the analysis of the same element in the predecessors of the respective subject. → heredo-collateral antecedents = test to predict maxillofacial ontogenetic development.



# Cranio-facial growth and development

Centrele osteogenetice ale craniului visceral, scheletul ADM-lui = executorii, efectorii programului de dezvoltare ontogenetică maxilo-facială.

Activitatea mai mult sau mai puțin intensă a acestor centre → determină dimensiunea elementelor ADM-lui.



# Cranio-facial growth and development

*0-2 years*

At birth:

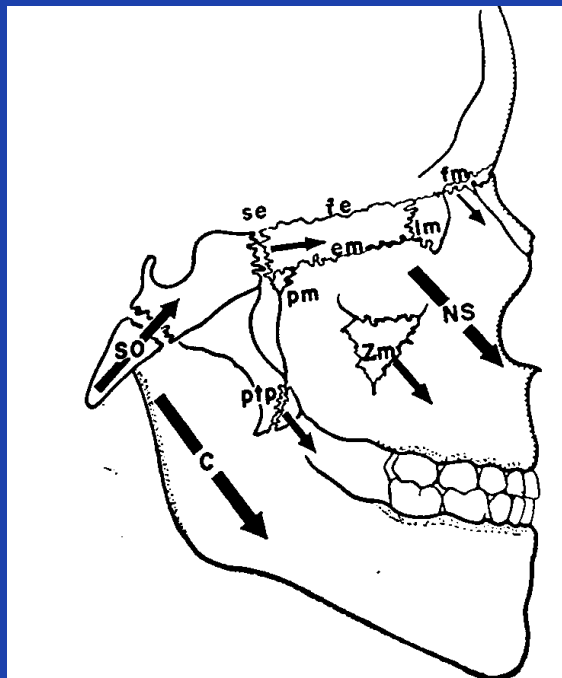
- the facial dimensions in relation to that of the adult are (according to Graber):
  - *face width* - 60%
  - *face height* - 45%
  - *face depth* - 35%
- the appearance of the face is flat and wide (D.V. reduced).



# Cranio-facial growth and development

*0-2 years*

➤ this increase is in the form of a divergent pattern, the so-called "V" in the opening, which widens progressively:



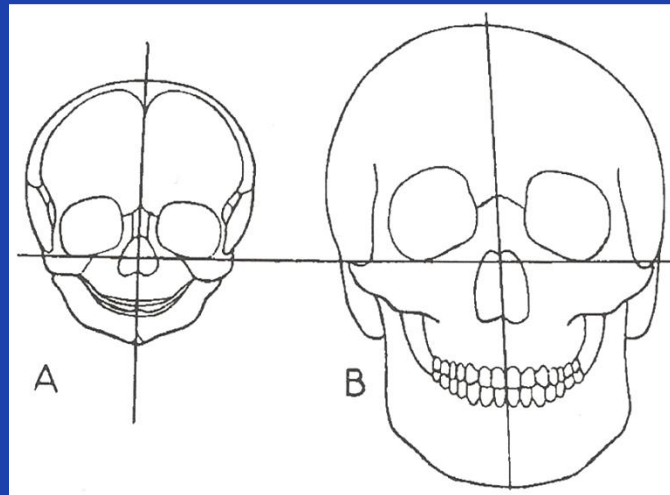
- the upper part of the face moves up and forward;

- the bottom, down and forward.

# Cranio-facial growth and development

The ratio of skull / face growth in frontal norm:

a. At birth; b. the adult.





# Cranio-facial growth and development

*3-6 years*

- there is a steady increase;
- the face / skull growth ratio becomes superunitary after the age of 3 years;
- the preschooler's face is taller and wider;
- there is significant transverse bone growth;
- there are no significant differences between the two sexes;



# Cranio-facial growth and development

*3-6 years*

- the entire temporary dentition has its roots formed, the occlusion passing through a relatively stable period;
- the temporary incisors have a more retruded position compared to the permanent ones;
- with the development of permanent teeth, the eruption of temporary teeth continues → the increase of the vertical dimension takes place;





# Cranio-facial growth and development

*6-12 years*

- there is an accentuated increase of the two jaws towards the cranial box;
- mandibular condyles continue to grow;
- in girls the mandibular development is nearing the end, while in boys it is only at the beginning;
- at the end of this period → the entire permanent dentition is present (except M3).



# Cranio-facial growth and development

## *Conclusions:*

Facial development is done simultaneously in the three spatial planes:

- from birth to the seventh month;
- between 3 and 5 years;
- to 7 years (very discreet);
- in the prepubertal period.

***Pre-pubertal period*** = period of maximum facial growth → the definitive morphological type of the face is established.

A vertical stack of four photographs on the left side of the slide, showing a child's facial growth from infancy to adolescence. The top photo is a newborn baby, followed by a young child, then a pre-teen, and finally a smiling adolescent at the bottom.

# Cranio-facial growth and development

## *Conclusions:*

The phenomenology of stomatognathic system formation, growth and development = particularly complex, permanently subject to the interaction of multiple factors → explains the high frequency with which disturbances of this phenomenology are encountered = dento-maxillary anomalies.

The stomatognathic system contains, in its composition, different structures as origin, reactivity and terms of reaching the structural and functional maturation.



# Cranio-facial growth and development

## *Conclusions:*

The growth and development processes of the dento-facial complex take place almost simultaneously and take place in close interdependence.

Each individual presents a personal growth model, defined by:

- quantity;
- direction;
- speed;
- moment of maximum growth.





# Cranio-facial growth and development

## *Conclusions:*

There are significant differences in the time of maximum growth peak → **girls** being, from this point of view, two years more advanced than boys.

In general, **boys** have a more pronounced growth trend than girls.



# Cranio-facial growth and development

## *Conclusions:*

***The pediatric dentist*** → can observe major changes inherent in growth.

→ has the possibility, knowing the particularities of the phenomenon of growth and development, to intervene at the moment of maximum growth (pubertal growth spurt) in order to obtain favorable results and at the same time stable over time.