

DEVELOPMENT OF HEAD & NECK

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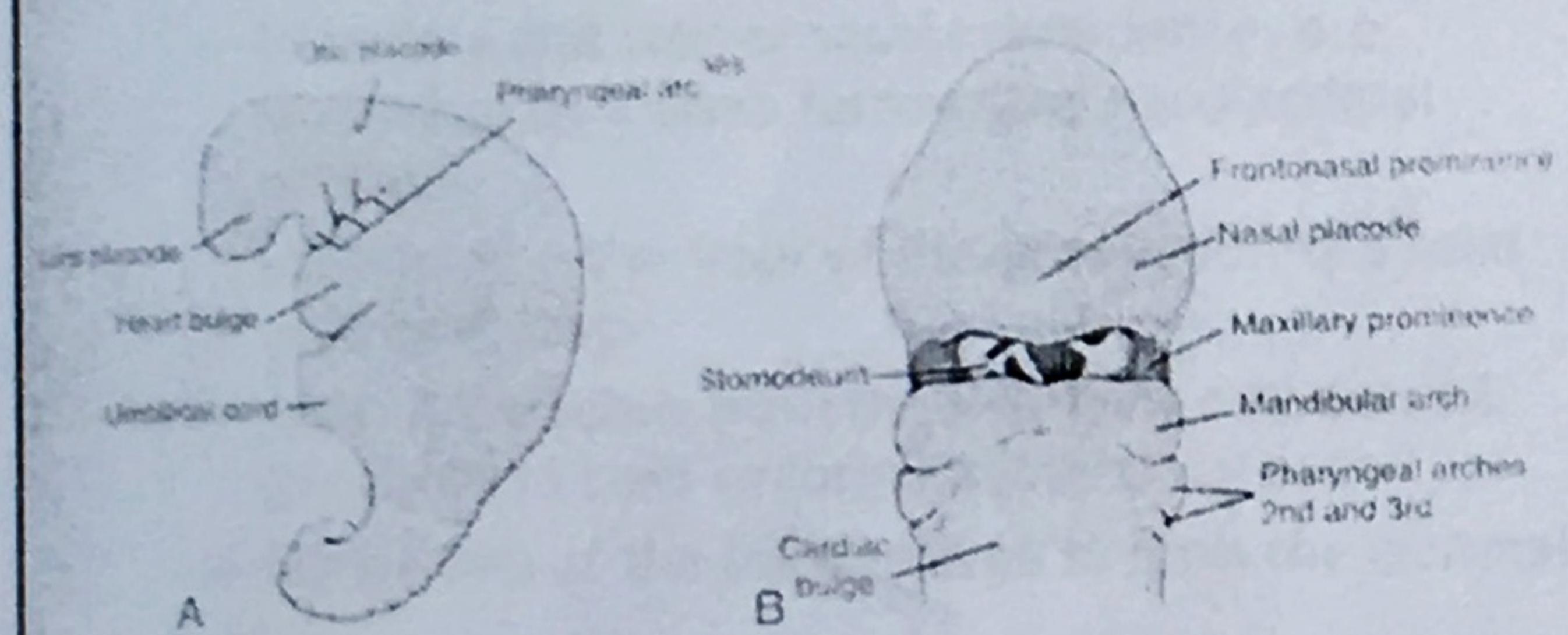
Development of face

Development of palate

Development of face

- Begins with a orifice (stomodeum=future mouth) & 3 facial prominences
 - 3 facial prominences
 - Frontonasal
 - Neural crest-derived mesenchyme, proliferated ventral to the brain vesicles
 - Covers superior region of the stomodeum
 - Maxillary
 - lies lateral to stomodeum
 - Mandibular
 - lies lateral to stomodeum
- } 1st pharyngeal arch

Development of face



Development of face

- On both sides of the frontonasal prominence thickenings of the surface ectoderm under the influence of the anterior part of forebrain forms , the **nasal (olfactory) placodes**.
- During 5th week, the nasal placodes invaginate to form **nasal pits**.
- During this process a ridge of tissue that surrounds each pit (**nasal prominences**)
 - Lateral nasal prominences
 - Medial nasal prominences

Development of face

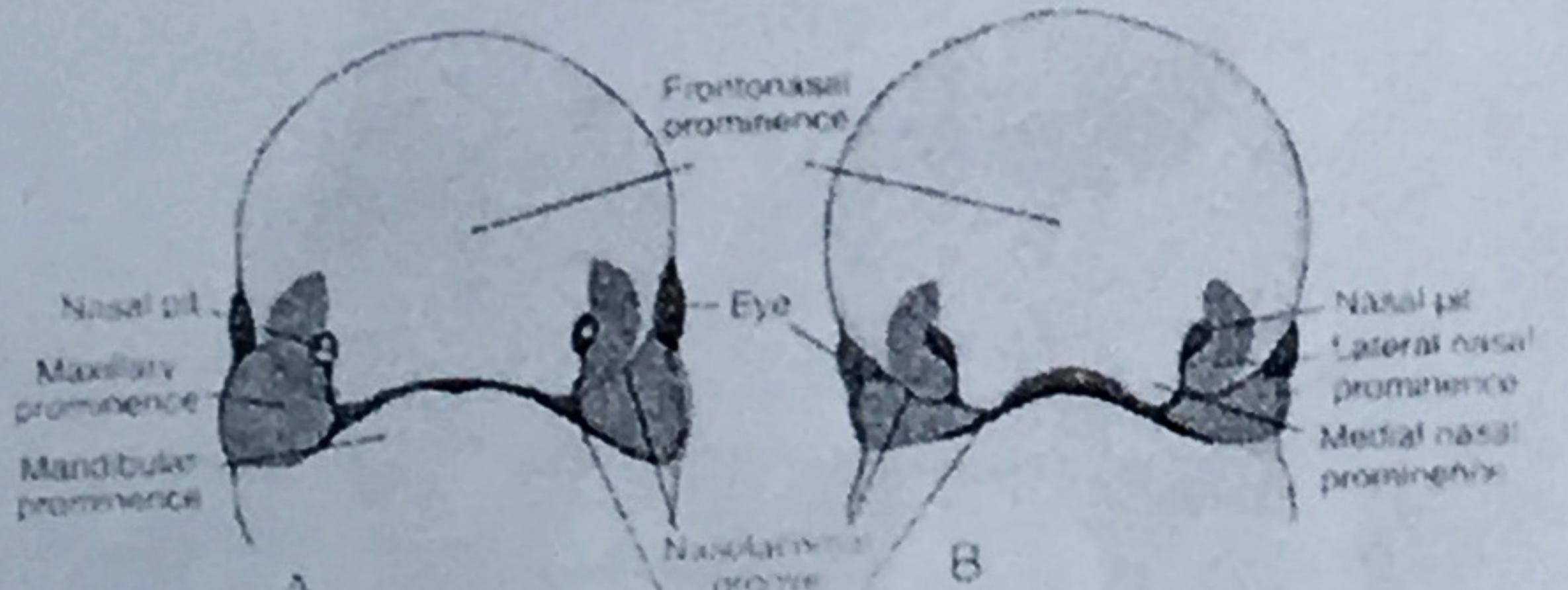


Figure 16.22: Ventral aspect of the face. A, 5-week embryo. B, 6-week embryo. The nasal prominences are gradually separated from the maxillary prominence by deep furrows.

Development of face

- Formation of upper lip
 - Maxillary prominences enlarge progressively
 - Push the medial nasal prominence close to each other & gap disappears
 - Gap between maxillary prominence & medial nasal prominence disappears
 - So the upper lips is formed by maxillary prominence & medial nasal prominence
 - Lateral nasal prominence is not involved in lip formation
- Formation of lower lip
 - Mandibular prominence joins in the mid line to form the lower lip

Development of face

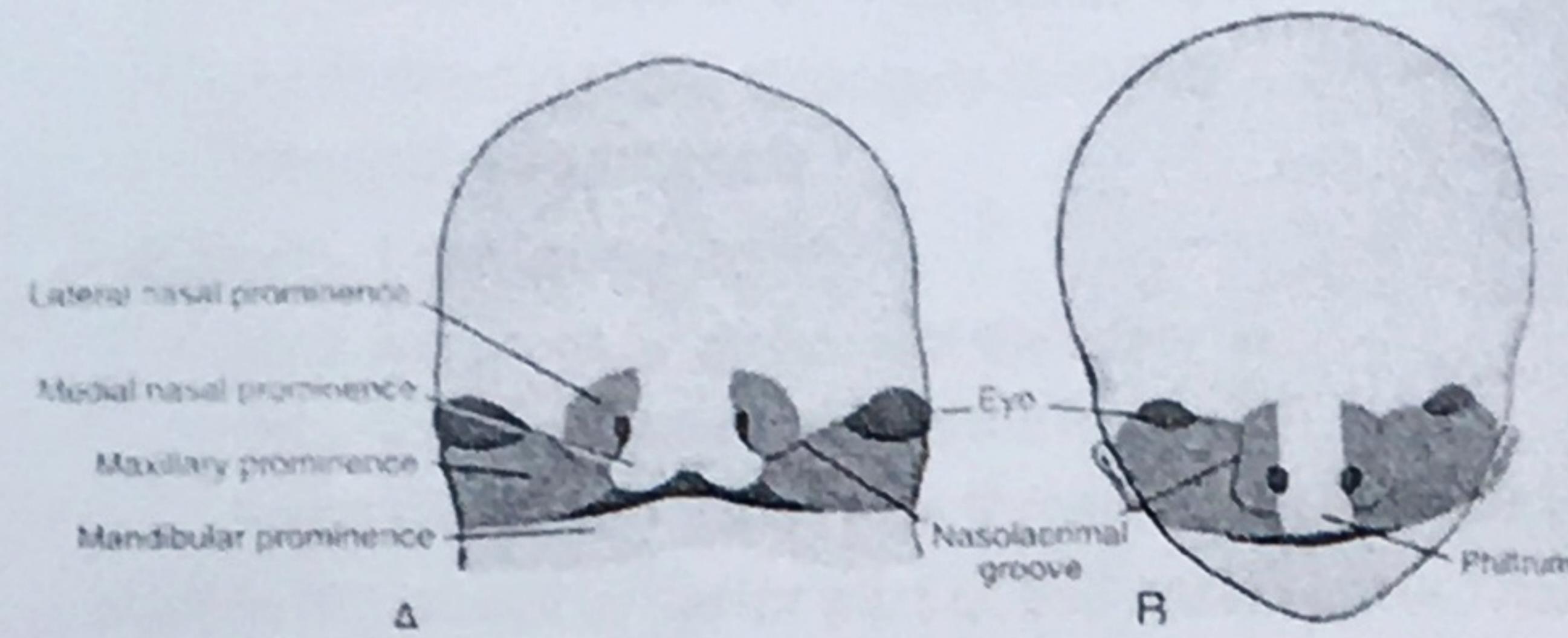


TABLE 16.3 Structures Contributing to Formation of the Face

Prominence	Structures Formed
Frontonasal ^a	Forehead, bridge of nose, and medial and lateral nasal prominences
Maxillary	Cheeks, lateral portion of upper lip
Medial nasal	Philtrum of upper lip, crest, and tip of nose
Lateral nasal	Alae of nose
Mandibular	Lower lip

^aThe frontonasal prominence is a single unpaired structure; the other prominences are paired.

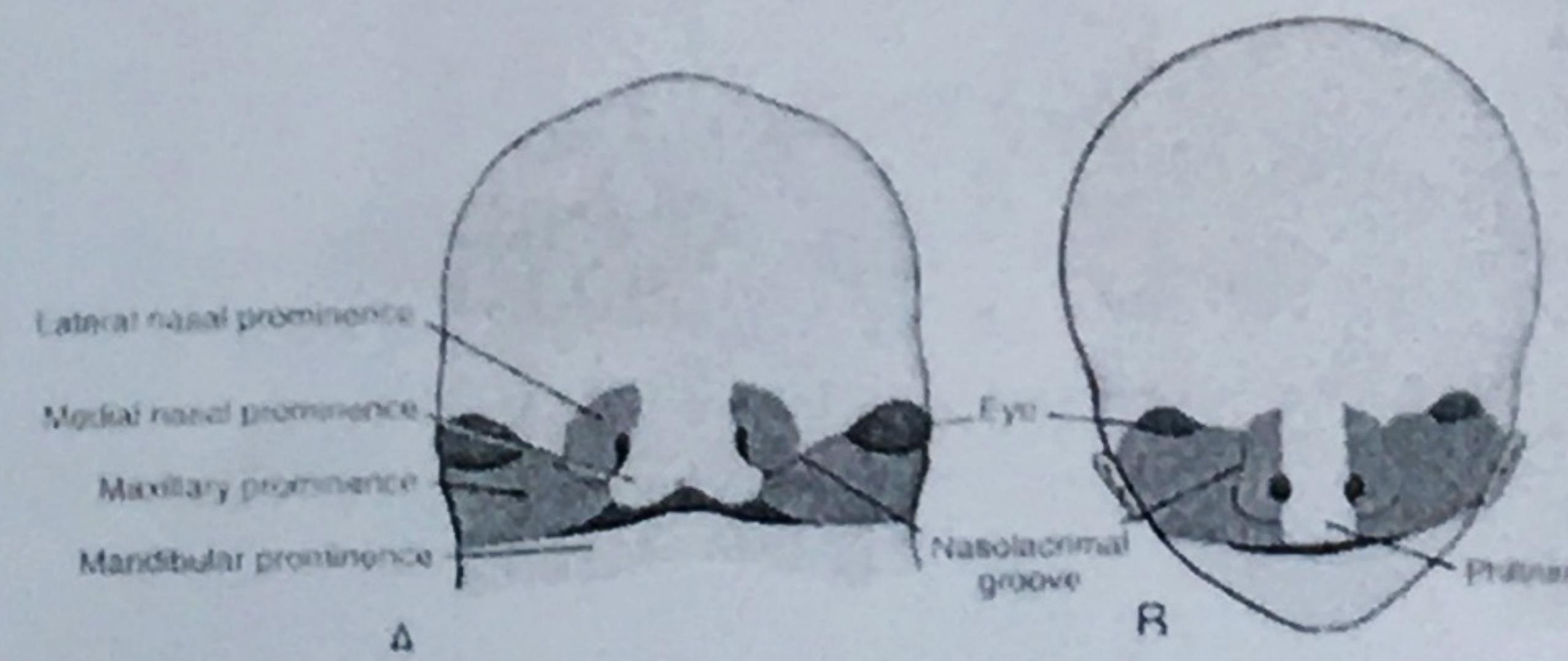
Development of face

- Development of nasolacrimal region
 - Maxillary and lateral nasal prominences are separated by a deep furrow (the nasolacrimal groove)
 - Ectoderm in the floor of this groove forms a solid epithelial cord
 - later it detaches from the overlying ectoderm & canalize the cord to form nasolacrimal duct
 - Upper end of the duct enlarges to form the lacrimal sac
 - Nasolacrimal duct runs from the medial corner of the eye to the inferior meatus of the nasal cavity

Development of face

- Development of the nose
 - Formed from 5 facial prominences
 - Frontal prominence forms the bridge
 - Merged two medial nasal prominences form the crest and tip of the nose
 - Two Lateral nasal prominences form the sides of the nose (alae)
 - Nasal cavity
 - Nasal pits deepen due to
 - Growth of the surrounding nasal prominence
 - Penetration into the underlying mesenchyme
 - Oronasal membrane separates the pits from the primitive oral cavity

Development of the nose

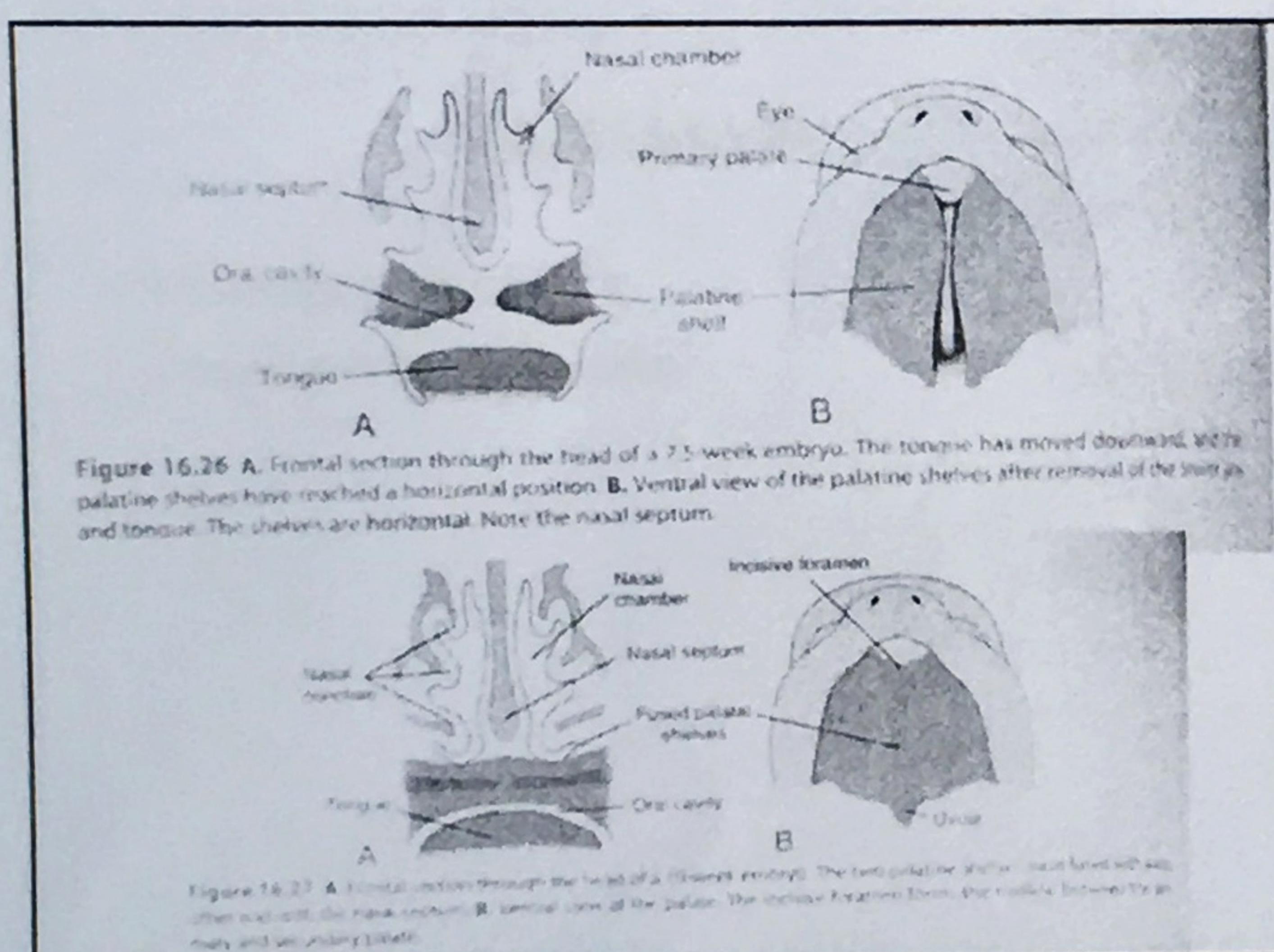
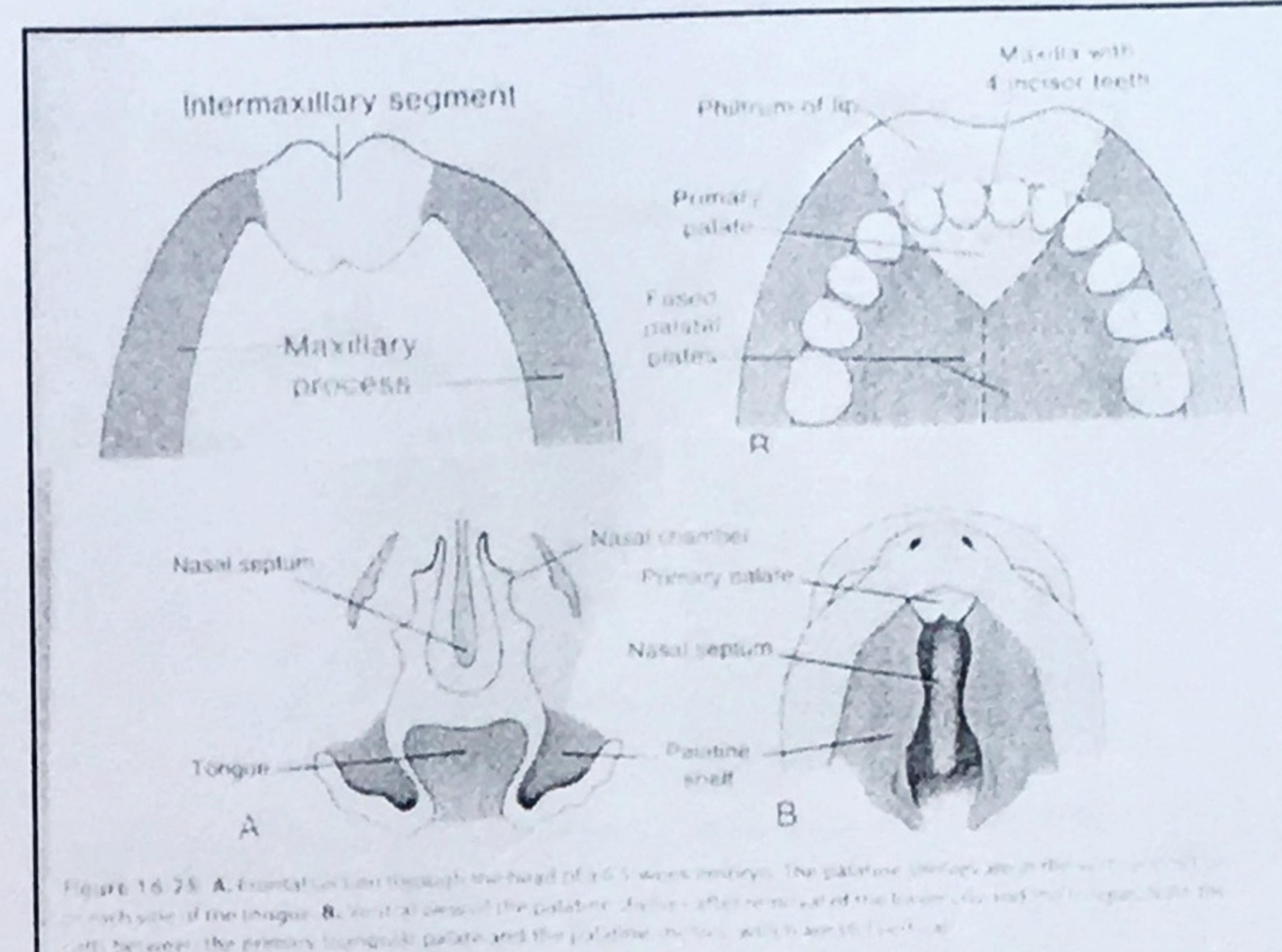


Development of palate

- Palate separates nasal cavity from oral cavity
- Formed by 3 different embryological parts
 - Intermaxillary Segment
 - Secondary Palate
 - Soft palate

Development of palate

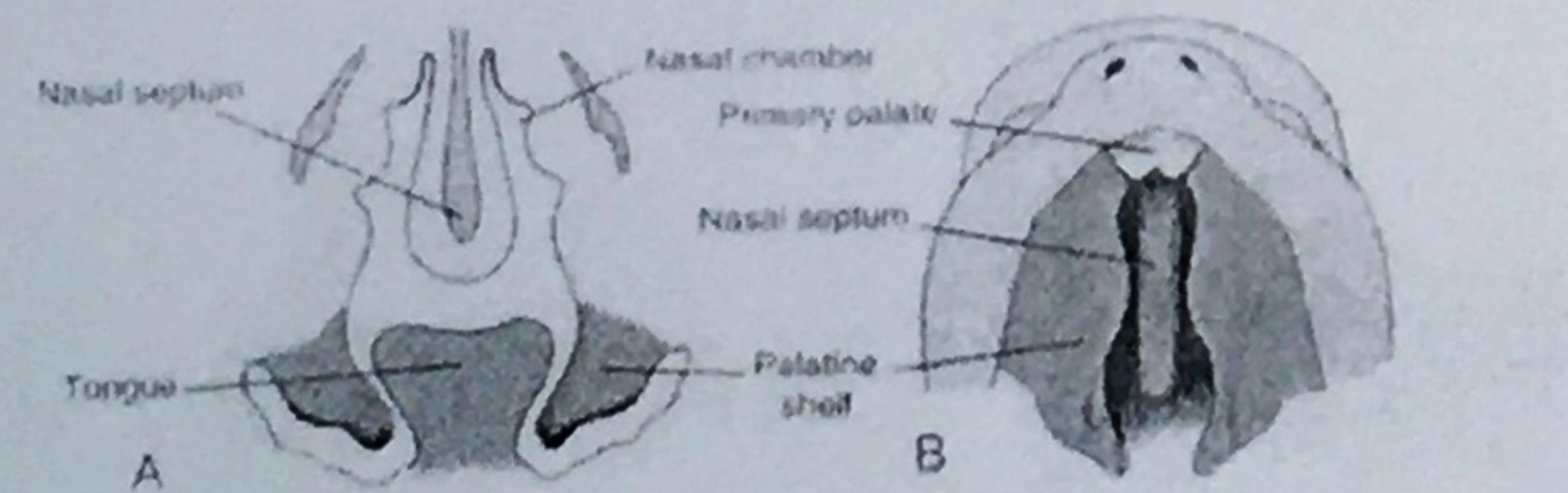
- Development of intermaxillary segment
 - Maxillary prominence & medial nasal prominence join not only in surface of face but at deeper level
 - Newly formed deeper structure is called intermaxillary segment
 - It forms 3 components
 - Labial component – philtrum of the upper lip
 - upper jaw component – carries the four incisor teeth
 - palatal component – forms the triangular primary palate
 - Joins the posteroinferior part of the nasal septum



Development of palate

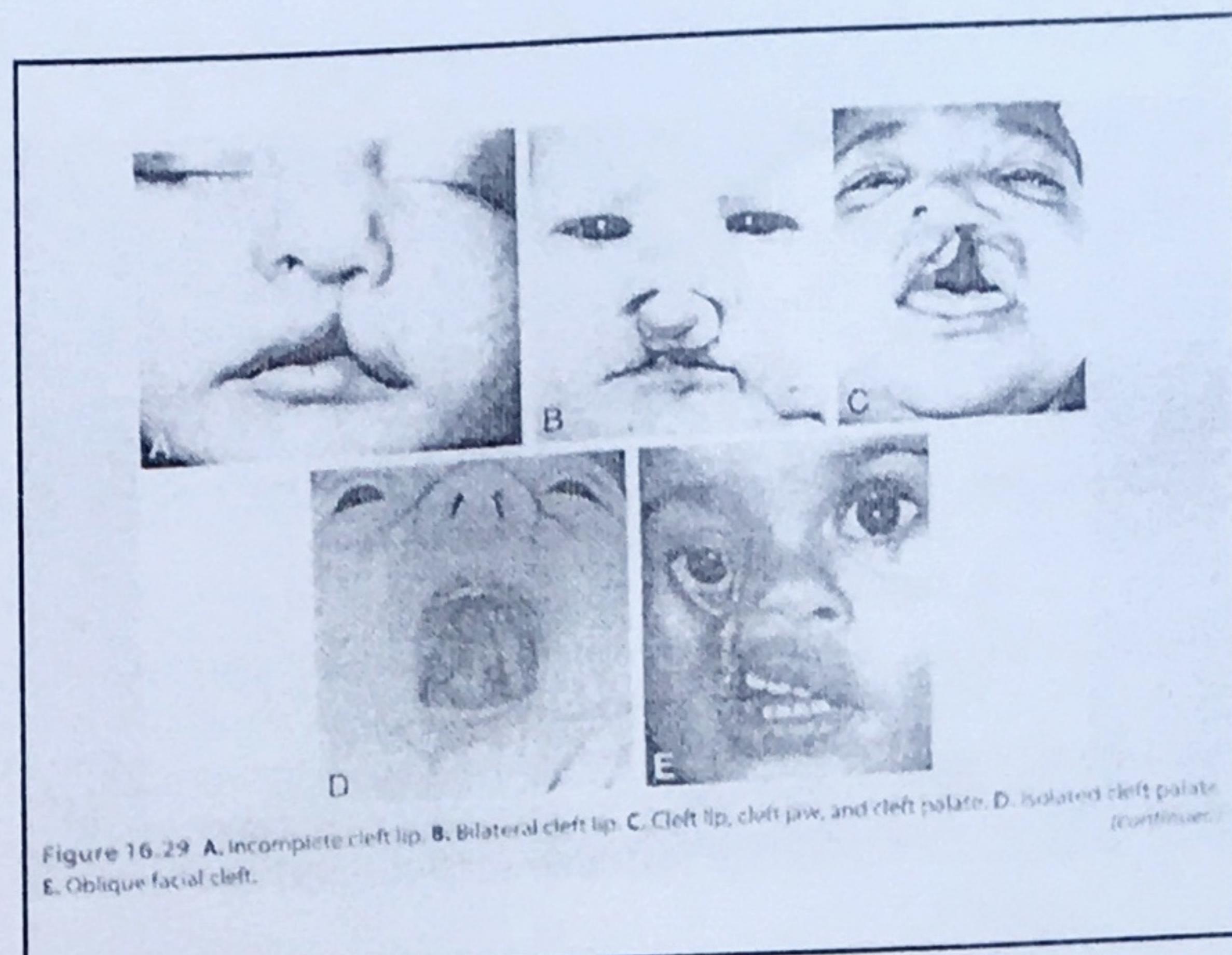
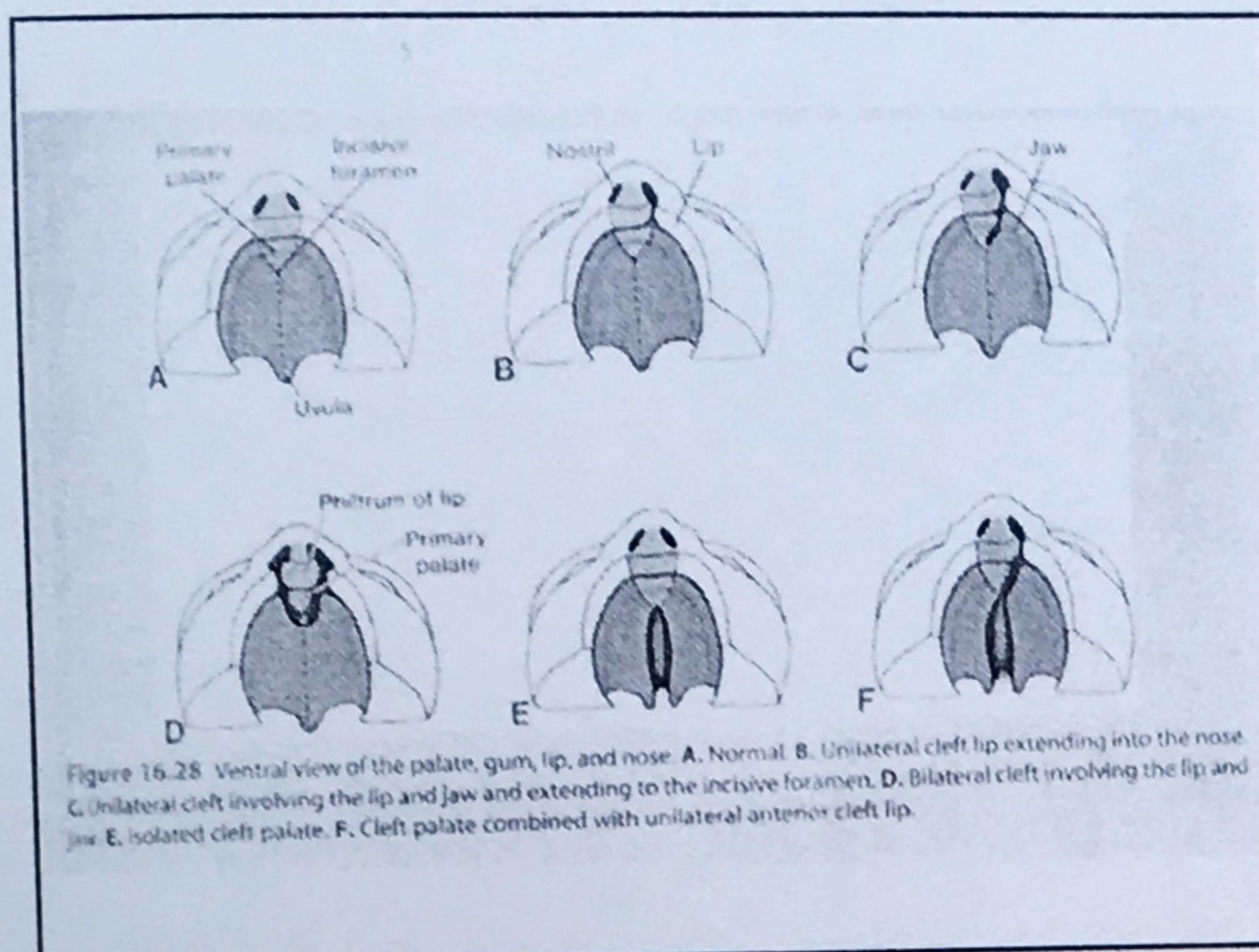
- Secondary Palate
 - Definitive palate is formed by two shelf like outgrowths from the maxillary prominences (palatine shelves)
 - Sixth week palatine shelves are directed obliquely downward on each side of the tongue
 - Seventh week palatine shelves ascend to attain a horizontal position above the tongue
 - Fuse in the mid line forming secondary palate
 - Nasal septum grows down & joins with the cephalic surface of the newly formed palate

Development of palate



Clinical implications

- Cleft lip
- Cleft palate
- Associated brain mal development



SUMMARY

- Development of face
- Development of palate