head and neck embryology short note

DR. AHMAD MUSTAFA AL- TARAWNEH

OMFS , KHMC

head and neck embryology short note

1

Pharyngeal Arches

GENERAL INFORMATION

Start forming in the 4th week of development

Develop as blocks separated by pharyngeal clefts

Initially, 6 arches develop, but the 5th regresses

Arising from the endoderm are compartments called pharyngeal pouches that extend toward the pharyngeal clefts

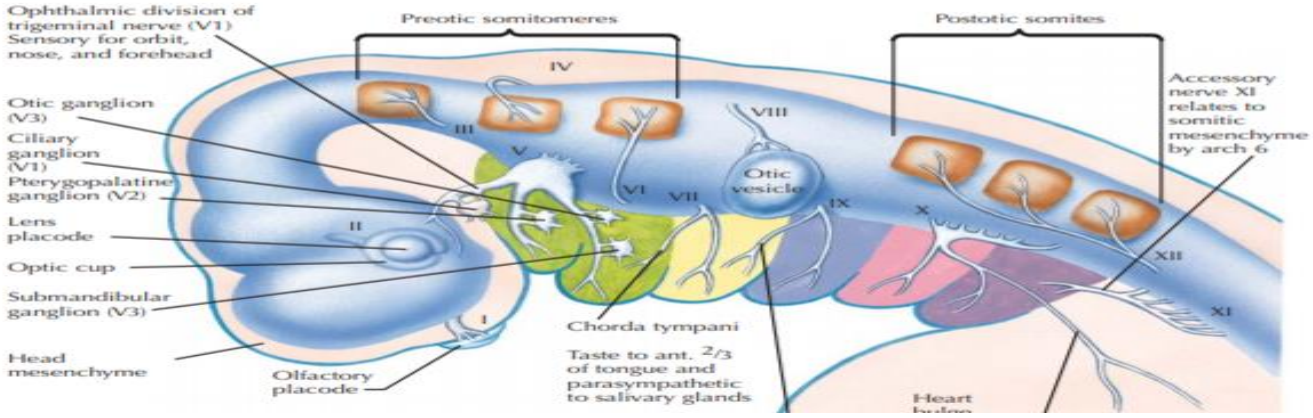
Help form 4 of the 5 swellings of the face:
- 2 mandibular processes (pharyngeal arch)
- 2 maxillary processes (pharyngeal arch)
- 1 frontonasal prominence

Composed of:
- External surface—ectoderm
- Internal surface—endoderm
- Central part—lateral plate mesoderm, paraxial mesoderm, neural crest

Skeletal components develop from the neural crest tissue

Muscular structures develop collectively from the mesoderm

Each arch is innervated by a cranial nerve that migrates with the muscles



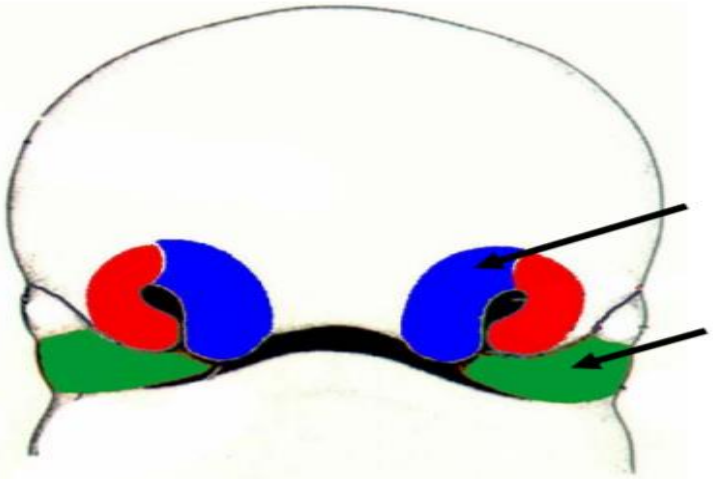
DERIVATIVES OF THE PHARYNGEAL ARCHES

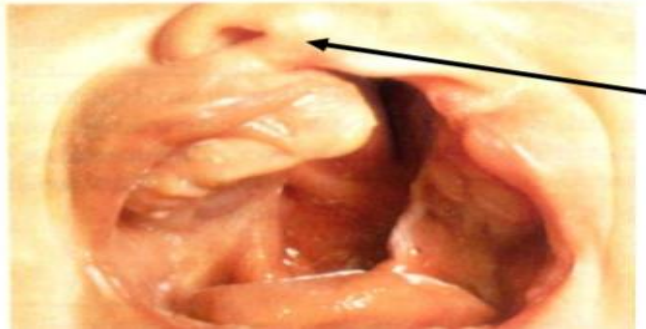
Arch	Muscles from Mesoderm	Skeletal Structures from Neural Crest	Cartilage Structures	Connective Tissue Structures	Nerve
1 Develops into: • Maxillary process • Mandibular process	Masseter Temporalis Lateral pterygoid Medial pterygoid Mylohyoid Anterior digastric Tensor tympani Tensor veli palatini	Maxilla Temporal (squamous portion) Zygoma Mandible Malleus Incus	Meckel's cartilage (degenerates in adulthood)	Sphenomandibular ligament Anterior ligament of the malleus	Trigeminal
2	Muscles of facial expression Posterior digastric Stylohyoid Stapedius	Lesser cornu of the hyoid Superior part of the hyoid body Styloid process Stapes	Reichert's cartilage	Stylohyoid ligament Connective tissue of the tonsil	Facial
3	Stylopharyngeus	Greater cornu of the hyoid Inferior part of the hyoid body		Connective tissue of the thymus and inferior parathyroid	Glossopharyngeal
4	Musculus uvulae Levator veli palatini Palatopharyngeus Palatoglossus Superior constrictor Middle constrictor Inferior constrictor Salpingopharyngeus Cricothyroid		Thyroid (from lateral plate mesoderm) Epiglottis	Connective tissue of the superior parathyroid and the thyroid	Vagus
5	Thyroarytenoid Vocalis Lateral cricoarytenoid Oblique arytenoids Transverse arytenoids Posterior cricoarytenoid Aryepiglottis Thyroepiglottis		Arytenoid Cricoid Cuneiform Corniculate (from lateral plate mesoderm)		Vagus

Cleft lip

CLEFT LIP

CLEFT LIP (cheiloschisis)
= Failure of fusion of Medial Nasal Process and Maxillary process
- 1/1000 Births, can be unilateral or bilateral
- At philtrum of lip





CLEFT LIP CAN OCCUR IN COMBINATION WITH CLEFT PALATE

PALATE DEVELOPMENT

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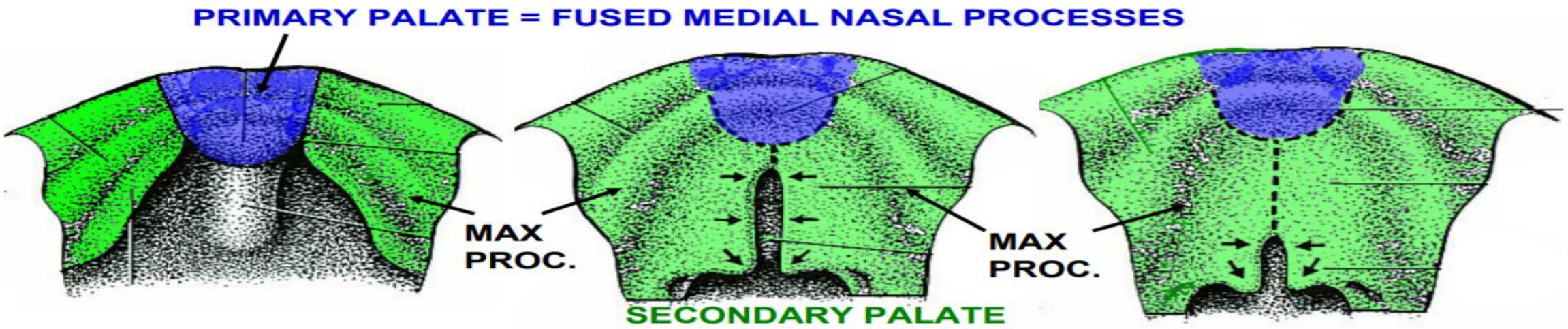
a. Primary Palate – Anterior to Incisive Foramen formed by union Medial Nasal Processes

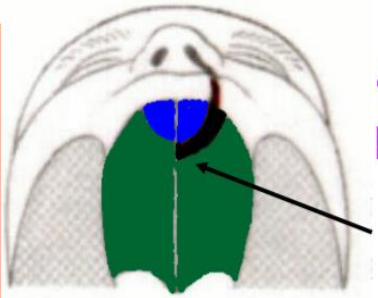


b. Secondary Palate – Posterior to Incisive Foramen- formed by fusion of Maxillary process of each side

Cleft palate

MALFORMATIONS: CLEFT PALATE

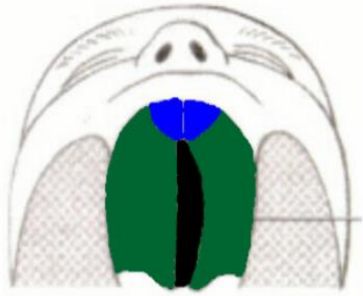
1) Anterior Cleft Palate
- Not fuse Medial Nasal Process and Maxillary Process (Primary and Secondary Palate)



1:1000 Births

INCISIVE FORAME

2) Posterior Cleft Palate
- Maxillary Processes from each side (Secondary Palate)



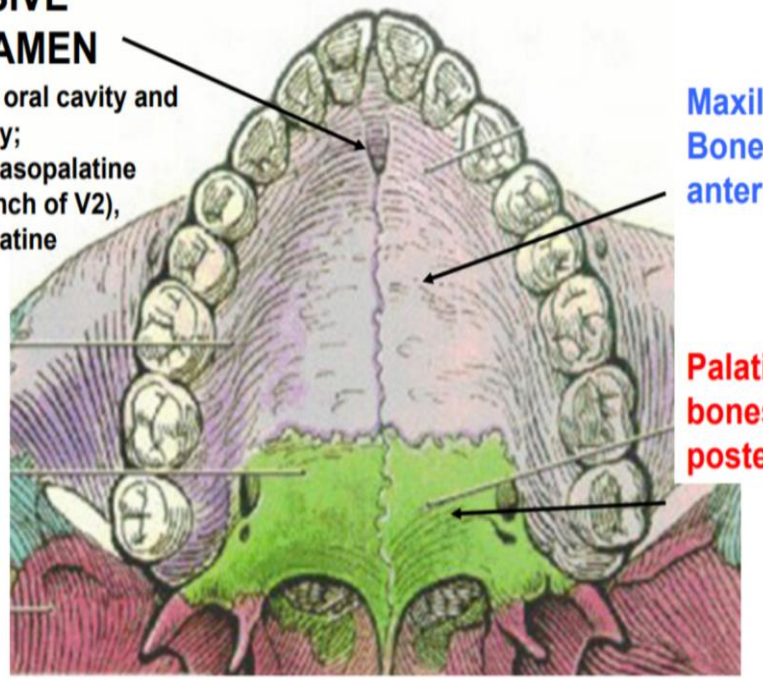
1:2500 births

Note: Ant. Cleft Palate is same as Cleft Lip

ANATOMY OF BONY PALATE

NOSE

INCISIVE FORAMEN
- connects oral cavity and nasal cavity; contains Nasopalatine nerve (branch of V2), Sphenopalatine artery



Maxillary Bones - anterior

Palatine bones - posterior


BEST
wishes