



Lecture title: Embryonic development of digestive system / The branchial arches

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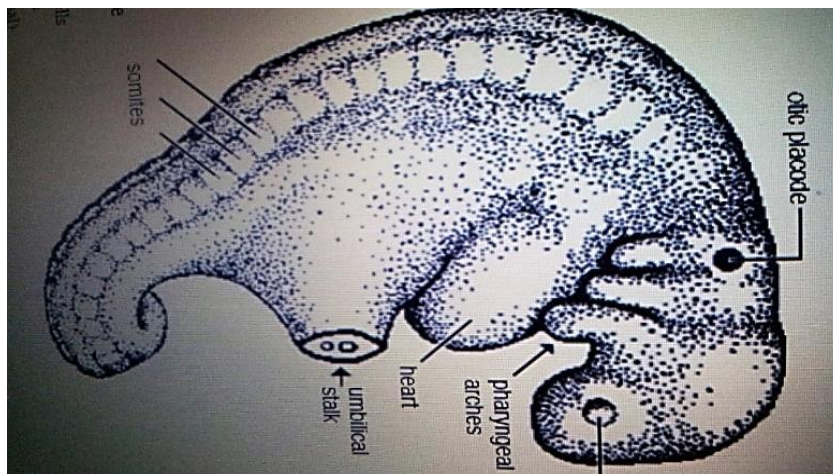
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Embryonic development of digestive system

The branchial arches

The skeletal components of each branchial arch are : Cartilage , Skeletal muscles , Vein , Nerve , Artery (aortic arch)

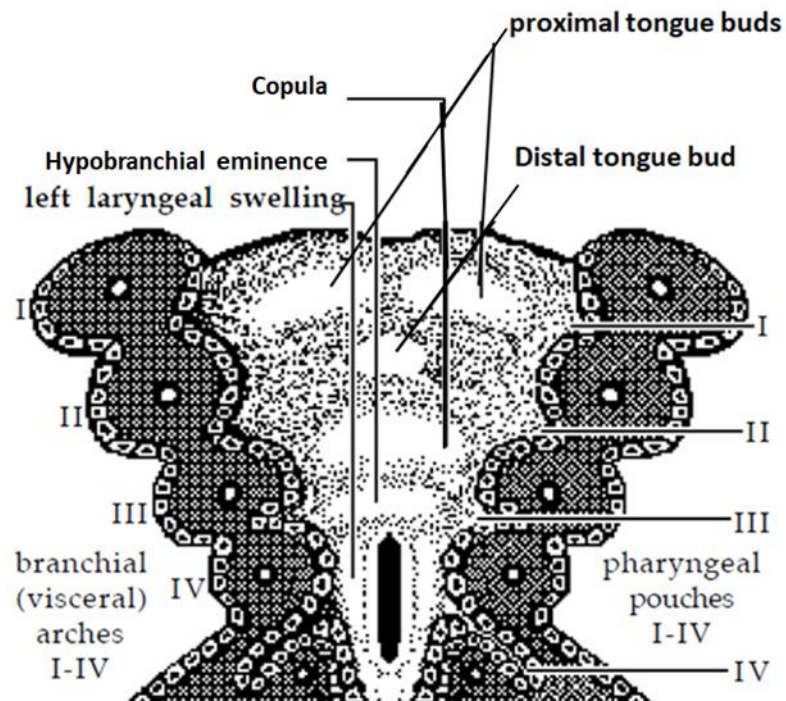


Derivatives of branchial arches:

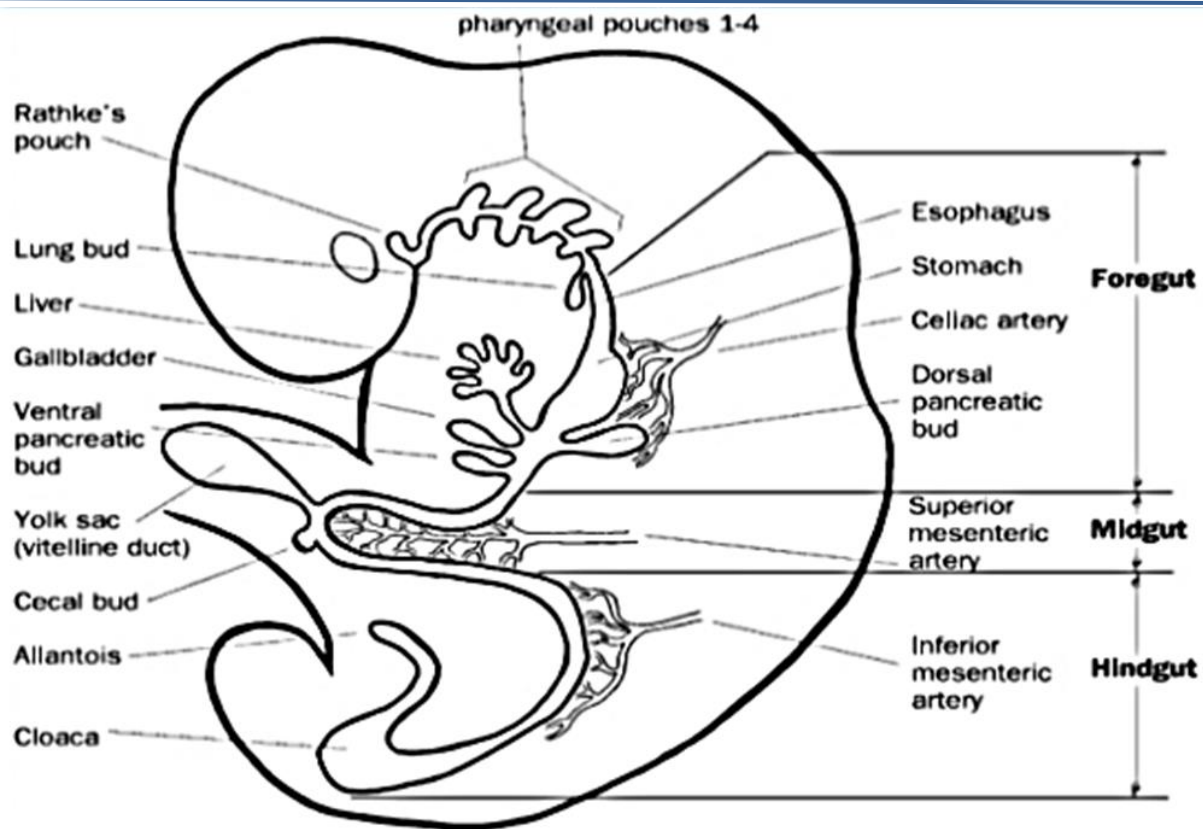
| Branchial arches | Cartilage derivatives | Muscles | Nerve | Artery |
|--------------------------------|-----------------------|----------------------|------------|--------------|
| 1 st branchial arch | malleus , incus , | Mastication muscles, | Mandibular | First aortic |



| | | | | |
|--|---|---|------------------------------------|---|
| (Mandibular arch) called Meckel's cartilage in embryo | maxillary prominence and mandibular prominence . | mylohyoideus, tensor veli palatini, tensor tympani, anterior belly of digastricus | division of Trigeminal nerve | arch (transitory) |
| 2nd branchial arch (hyoid arch) called Reichert's cartilage embryo | Stapes, styloid process of temporal bone, styloid ligament, stylohyoid bone . | Stapedius m., muscles of facial expressions ,stylohyoideus, caudal belly of digastricus . | Facial nerve | Stapedial artery (transitory) |
| 3rd branchial arch | ceratohyoid and other parts of hyoid bone . | Stylopharyngeus caudalis muscle (dilator muscle of pharynx) . | Glossopharyngeal nerve . | Common carotid & internal carotid arteries |
| 4th branchial arch | Laryngeal cartilages except arytenoid . | Pharyngeal muscles except dilator, muscles of pharynx , levator veli palatini , extrinsic muscles of larynx . | Vagus (pharyngeal branch) | Right subclavian and aortic arch in the left . |
| 6th branchial arch | Arytenoid cartilages | Intrinsic muscles of the larynx . | Vagus nerve (recurrent laryngeal) | The part between pulmonary trunk and dorsal aorta |



Dorsal view of floor of primitive pharynx (the roof is removed)



Development of the tongue :

The tongue derived from the mesenchymal cells of 1st to 4th branchial arches as follow

The **mesenchymal** cells of the **1st branchial arch**
 give rise to
 two **distal tongue buds** and one **median tongue bud**
 give rise to
 The oral part of tongue (**cranial two thirds (2/3)** of the tongue)



The oral part of the tongue innervated by:

- 1-Chorda tympani nerve which is a branch of facial nerve .
- 2-Lingual nerve which is a branch of mandibular nerve (division of trigeminal nerve).
- 3-Hypoglossal nerve .

The **mesenchymal** cells of the **2nd , 3rd , 4th** branchial arches
give rise to

Copula and hypo branchial eminence
give rise to

The pharyngeal part of the tongue (**caudal third of the tongue**)

Pharyngeal part of the tongue innervated by glossopharyngeal & hypoglossal nerves .

