**LEC. 10 د.حلل الشرع**

**Pharyngeal Pouches**

The human embryo has five pairs of pharyngeal pouches. The last one of these is atypical and often considered as part of the fourth. The fate of each pouch is discussed separately.

First pharyngeal pouch; The first pharyngeal pouch forms a stalklike diverticulumwhich comes in contact with the future **external auditory meatus**. the diverticulum widens into a saclike structure, **middle ear cavity,** and the proximal part remains narrow, forming the **auditory** (**eustachian**) **tube.** Derivatives of this pouch are supplied by Mandibular nerve.



Second pharyngeal pouch; The epithelial lining of this pouch proliferates and forms buds. The buds are secondarily invaded by mesodermal tissue, forming the primordium of the **palatine tonsil.** During the third and fifth months, the tonsil is infiltrated bylymphatic tissue; it's supplied by the [facial nerve](https://en.wikipedia.org/wiki/Facial_nerve).

Third pharyngeal pouch; In the fifth week, epithelium of the third pouch differentiates into the **inferior parathyroid gland and** the **thymus.** The thymus then migrates pulling the **inferior parathyroid** with it.

In the young child, the thymus occupies considerable space in the thorax and lies behind the sternum and anterior to the pericardium and great vessels. In older persons, it is difficult to recognize, since it is atrophied and replaced by fatty tissue.

 The parathyroid tissue of the third pouch finally comes to rest on the dorsal surface of the thyroid gland and forms the **inferior parathyroid gland**. The main nerve supply to the derivatives of this pouch is [glossopharyngeal nerve](https://en.wikipedia.org/wiki/Glossopharyngeal_nerve).

Fourth pharyngeal pouch; Epithelium of the fourth pharyngeal pouch forms the **superior parathyroid gland.** It attaches itself to the migratingthyroid**.** Nerve supply is the superior laryngeal nerve.

Fifth pharyngeal pouch; The fifth pharyngeal pouch, the last to develop, is usually considered to be a part of the fourth pouch. It gives rise to cells of the ultimobranchial body give rise to the C**-cells** of the thyroid gland. These cells secrete **calcitonin,** a hormone involved in regulation of the calcium level in the blood.

**Molecular Regulation of Facial Development**

As indicated, much of the face is derived from neural crest cells that migrate into the pharyngeal arches. In the hindbrain, crest cells originate from segmented regions known as **rhombomeres.**

There are eight of these segments in the hindbrain (R1 to R8). Crest cells from R1 and R2 migrate to the first arch, cells from R4 go to the second arch, those from R6 and 7 to the third arch, and those from R8 to the fourth and sixth arches. In addition, the first arch receives crest cells originating in the midbrain.

Few if any crest cells form from R3 and R5. Most of the cells from these rhombomeres undergo cell death by **apoptosis.**

