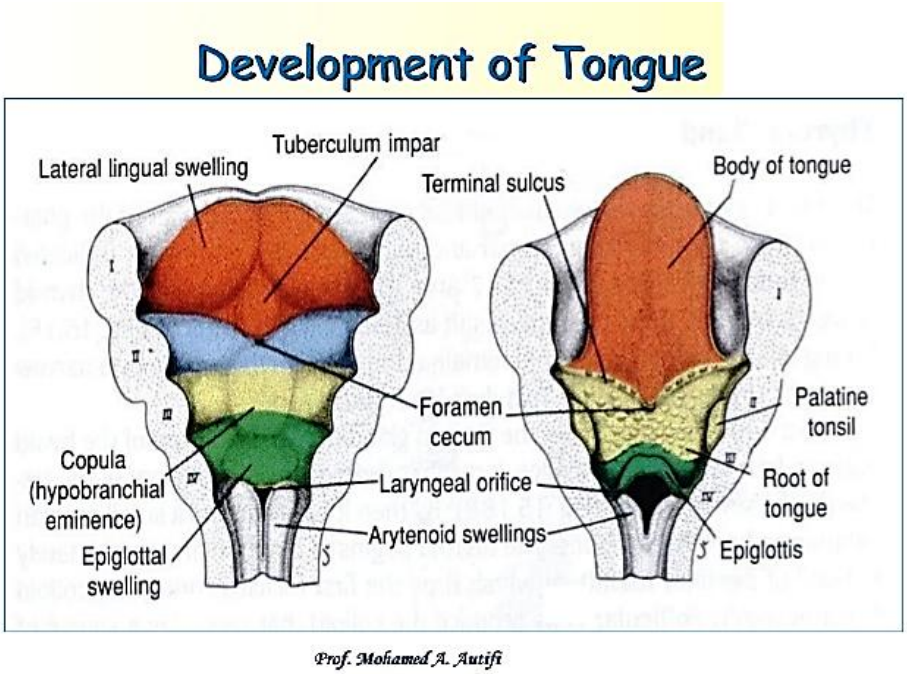
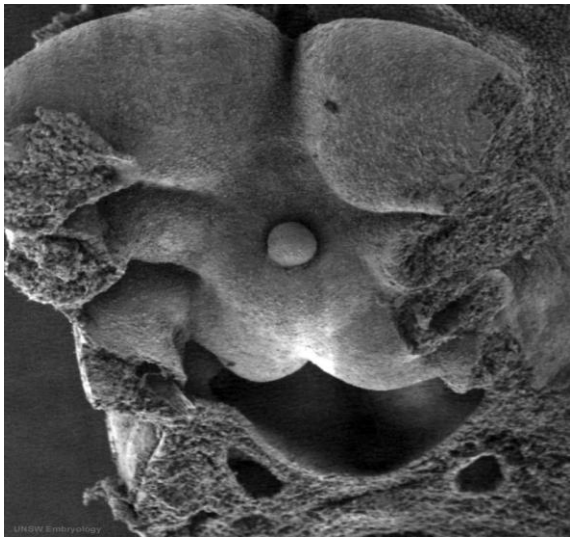
Embryology6 **Dr.Ban**

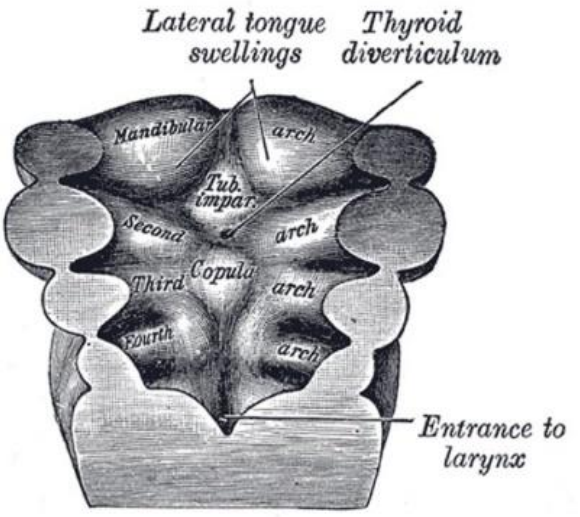
Development of the tongue

The tongue's embryonic orgin is derived from all pharyngeal arches contributing different components. The tongue begins to develop during the 4th week of embryogenesis from a median swelling, known as the tuberculum impar of the first pharyngeal arch. At 5th week a pair of lateral swellings, the lateral lingual swellings appear,which expand and cover the tuberculum impar and continue to develop through prenatal development forming the anterior 2/3rd rd of the tongue. The line of their fusion is marked by the median sulcus.

A swelling appears in the midline by fusion of the ventromedial part of the second pair of pharyngeal arches called the copula .During the 5th and 6th weeks the copula is overgrown by a swelling from the 3rd and 4th arches called the hypopharyngeal eminence, and this develops into the posterior part of the tongue. The boundary between the two parts of the tongue, is marked by the V-shaped terminal sulcus . At the tip of the terminal sulcus is the foramen caecum, which is the point where the embryological thyroid begins to descend.







Innervation of the tongue

Innervation of the anterior 2/3rd of the tongue:

Sensory innervation of the mucosa is via the lingual branch of the trigeminal nerve .Taste bud innervation is via the chorda tympani branch of the facial nerve, except for the taste buds in the circumvallate papilla that present in the posterior most part of the anterior 2/3rd of the tongue innervated by the glossopharyngeal nerve.

Innervation of the posterior 1/3rd of the tongue:

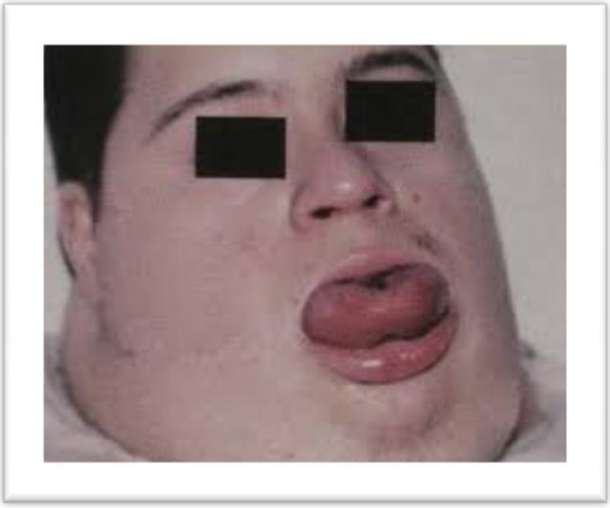
Sensory innervation of the mucosa is mostly via the glossopharyngeal nerve (and some vagus) .Taste innervation is mostly via the glossopharyngeal nerve (and some vagus) .Motor innervation of the intrinsic skeletal muscles is via the hypoglossal nerve .

Ankyloglossia (Tongue-Tie)

Ankyloglossia (tongue-tie) is the general clinical term for the short lingual frenulum (less than 2 cm), that limits the range of movement of the tongue, This is associated with speech development disorders and feeding disorders. In the most common form of ankyloglossia, the frenulum extends to the tip of the tongue.

Macroglossia

Macroglossia is the medical term for an unusually large tongue. Sever enlargement of the tongue can cause cosmetic and functional difficulties in speaking, eating, swallowing and sleeping. Macroglossia is uncommon, and usually occurs in children. There are many causes can be associated with a number of genetic abnormalities including: trisomy 21 (Down syndrome), acromegaly. Treatment is dependent upon the exact cause.

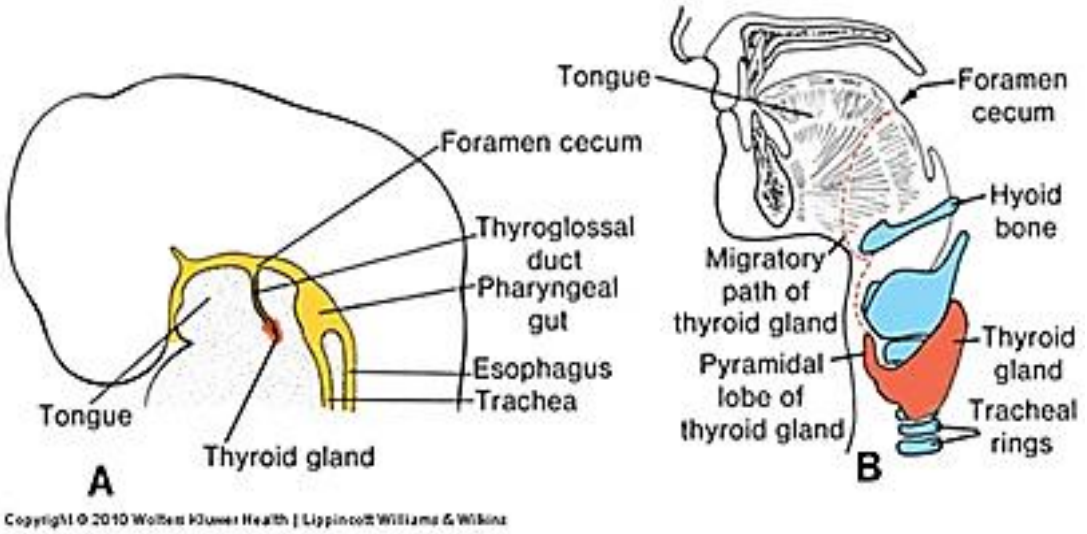


Microglossia

This is a condition where the size of the tongue is abnormally small. Cases of complete absence of the tongue have been reported. Fortunately, it is a rare condition. Obviously, a tiny tongue will pose many difficulties related to speech and swallowing. There is no treatment for this condition, and the affected person will have to train their tongue to the best of their abilities.

Thyroid gland

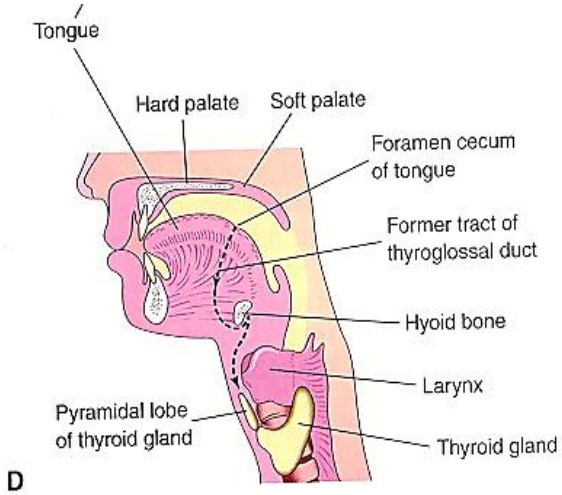
The thyroid gland appears as an epithelial proliferation at a point indicated by the foramen ceacum . Subsequently, the thyroid descends in front of the pharyngeal gut as a bilobed diverticulum . During this migration, the thyroid remains connected to the tongue by the thyroglossal duct which later disappears. With further development, the thyroid gland descends in front of the hyoid bone and the laryngeal cartilages. It reaches its final position in front of the trachea in the 7^{th} week. The thyroid begins to function at approximately the end of the third month, at which time the first follicles containing colloid become visible. Follicular cells produce the colloid that serves as a source of triiodothyronine(T3) and thyroxine (T4). Parafollicular, or C, cells derived from the ultimobranchial body ,serve as a source of calcitonin.



A. The thyroid primordium arises as an epithelial diverticulum in the midline of the pharynx immediately caudal to the tuberculum impar. B. Position of the thyroid gland in the adult. Broken line, the path of migration.

Thyroglossal cyst

A thyroglossal cyst may lie at any poínt along the migratory pathway of the thyroid gland but is always near or in the midline of the neck. It is a cystic remnant of the thyroglossal duct. Although approximately 50% of these cysts are close to or just inferior to the body of the hyoid bone , they may also be found at the base of the tongue or close to the thyroid cartilage.Sometimes, a thyroglossal cyst is connected to the outside by a fistulous canal, a thyroglossal fístula. Such a fistula usually arises secondarily after rupture of a cyst but may be present at birth.



The thyroid gland is the first endocrine gland to develop in embryo.It begins to form about 3–4 weeks after fertilization.By seventh week it migrates to the base of the neck, passing anterior to the hyoid bone. During migration, the thyroid remains connected to the tongue by a