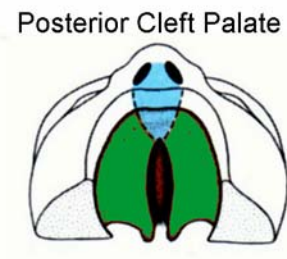
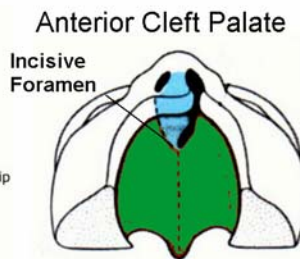
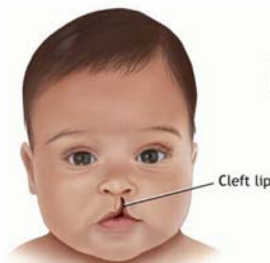
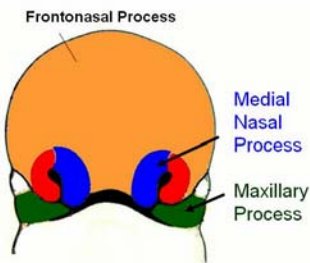


REVIEW: CLINICAL EMBRYOLOGY OF HEAD AND NECK

Clinical Condition	Normal development	Abnormal	Signs/ Symptoms	Treatment
Cleft Lip (cheiloschisis)	Fusion of medial nasal and maxillary processes forms upper lip	Failure of fusion of medial nasal and maxillary processes	Cleft at philtrum of upper lip	Surgical repair
Cleft Palate (palatoschisis)	Anterior - Fusion of medial nasal processes (Primary palate) and maxillary processes (Secondary Palate); Posterior - Secondary palate formed by fusion of Maxillary processes of two sides	Failure of fusion	Anterior - Cleft <u>anterior to Incisive foramen</u> ; Posterior - Cleft <u>posterior to Incisive foramen</u>	Surgical repair
Malformation of nasolacrimal duct (dacryostenosis)	Duct forms as cord between maxillary and frontonasal processes! extends from lacrimal sac (at medial canthus of eye) to nasal cavity (inferior meatus)	Cord fails to canalize	Continuous flow of tears over lower lid onto face	Surgical repair
First Arch (Treacher Collins) Syndrome	First brachial arch forms skeletal elements: 1) malleus, incus 2) contributes to mandible (Meckel's cartilage)	Neural crest cells do not migrate into Arch 1	1) Mandibular hypoplasia 2) Conductive hearing loss 4) Facial malformation	Some surgical repair
Thyroglossal duct cysts	Thyroid forms as evagination at foramen cecum of tongue; tissue migrates ant. to Hyoid bone in midline of neck to location below Cricoid cartilage	Glandular tissue or cysts develop anywhere along path of migration	Mass in midline of neck	Surgical removal (remove tract to tongue)
Abnormal location/ Accidental Removal of parathyroid glands	Normally posterior to thyroid gland or embedded in it; develop from branchial pouches 3 and 4 Inferior parathyroid - pouch 3 Superior parathyroid - pouch 4	Can be located within thyroid gland or ectopic	Normally no symptoms; calcium imbalance If accidentally remove (during thyroid surgery)	Treat calcium imbalance pharmacologically, etc.



BRANCHIAL ARCHES AND DERIVATIVES

ARCH (NERVE)	SKELETAL	LIGAMENTS	MUSCLES
First (V)	1) Malleus 2) Incus	1) Ant. ligament of malleus 2) Spheno-mandibular ligament	1) Muscles of Mastication 2) Tensor tympani 3) Tensor palati 4) Mylohyoid 5) Ant. belly of Digastric
Second (VII)	1) Stapes 2) Styloid process 3) Hyoid bone - lesser horn, upper half of body	Stylohyoid ligament	1) Muscles of Facial Expression 2) Stapedius 3) Stylohyoid 4) Post. belly of Digastric
Third (IX)	Hyoid bone - greater horn, lower half of body	-----	Stylopharyngeus
Fourth (X)	Cartilages of Larynx	-----	1) All muscles of Larynx 2) All muscles of Pharynx (except Stylopharyngeus) 3) All muscles of Soft Palate (except Tensor palati)
Sixth (XI)	-----	-----	1) Sternocleidomastoid 2) Trapezius

STRUCTURES DERIVED FROM BRANCHIAL POUCHES, CLEFT AND MEMBRANE: BRANCHIAL 'CLEFT' CYSTS (FISTULI = channels from pharynx to skin)

POUCH	FORMS	CLINICAL
First	1) Auditory tube 2) Tympanic cavity	First Branchial 'Cleft' cyst - tract to external auditory meatus or auditory tube
Second	Lining (crypts) of palatine tonsils	Second Branchial 'Cleft' cyst - tract to tonsillar fossa (palatine tonsils) - MOST COMMON CYST
Third	1) Inferior parathyroid gland 2) Thymus	Third Branchial 'Cleft' cyst - tract to thyrohyoid membrane or piriform recess
Fourth	1) Superior parathyroid gland 2) C-cells of Thyroid	rare

Note: Pouch 3 structures migrate below (caudal) to Pouch 4 structures.

Note: **Location of Cysts and Fistuli - in lateral neck, anterior to Sternocleidomastoid muscle**

Note: **First Branchial Cleft forms Ext. Auditory Meatus; First Branch. Membrane = Tympanic Membrane**

