

HEAD AND NECK EMBRYOLOGY PRACTICE QUESTIONS (ANSWER KEY AT END)



1. _____ A neonate is examined and found to have a large defect located at the philtrum of the upper lip (photo above). This condition arises because of failure of fusion of structures in embryonic development. Failure of fusion of which of the following structures would result in this condition?

- A. Maxillary and Mandibular processes
- B. Maxillary and Medial Nasal processes
- C. Maxillary and Lateral Nasal processes
- D. Medial and Lateral Nasal processes
- E. Frontonasal process with Medial Nasal process.

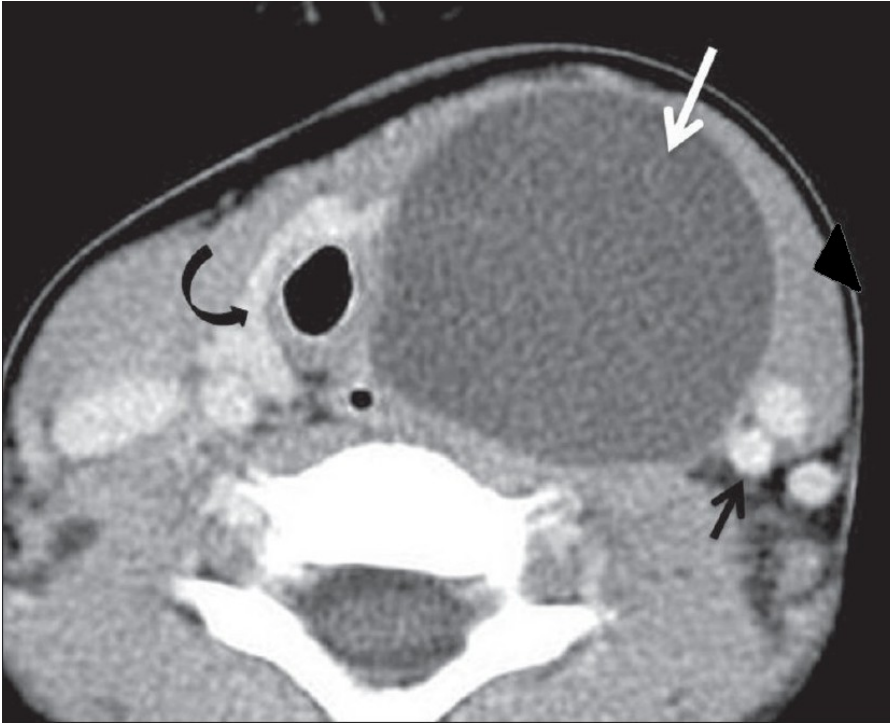


2._____ A young boy is brought to a physician working in a field hospital. The mother of the boy says he has difficulty swallowing and that food is expelled through the nasal cavity. Upon examination, the physician finds a large defect in the hard and soft palates (photo above) and suspects that the child developed with a Posterior Cleft palate. Which of the following is the anatomical landmark that would be used to differentiate Posterior and Anterior cleft palate?

- A. Greater palatine foramen.
- B. Infraorbital foramen
- C. Incisive foramen
- D. Mental foramen
- E. Mandibular foramen

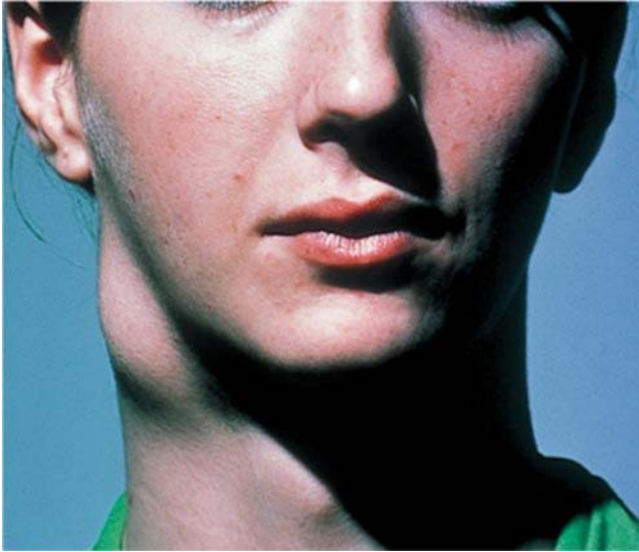


3. _____ An infant has a continuous secretion of tears from the left eye (photo above). MRI of the orbit appears normal and the lacrimal gland is not enlarged. The physician suspects that the condition is resulting from obstruction of the nasolacrimal duct due to failure of canalization of the duct in development. The obstruction prevents normal drainage of tears. The nasolacrimal duct normally drains to which of the following structures?
- A. Inferior meatus of the nasal cavity
 - B. Superior meatus of the nasal cavity
 - C. Bulla ethmoidalis of the nasal cavity
 - D. Infraorbital foramen
 - E. Maxillary sinus
4. _____ During a routine auditory test, a child is found have a severe conduction deficit in one ear. High resolution CT scan of the tympanic cavity shows a complete agenesis of the stapes. This condition could result from failure of formation of the stapes from which of the following structures?
- A. First branchial arch
 - B. Second branchial arch
 - C. Third branchial arch
 - D. Frontonasal process
 - E. First branchial pouch



5. _____ A 4-year-old boy presents with an asymptomatic, left-sided neck swelling that had been present since birth. CT imaging (above) shows a mass (white arrow) in the anterior neck that had displaced the carotid vessels, the trachea and thyroid gland (black arrows). The mass was determined to be connected to a tract that extended to the thymus gland in the anterior mediastinum. Superiorly the tract terminated in the piriform recess. Which of the following is likely to be the initial embryonic origin of the mass and cause of the cyst?

- A. First branchial pouch, persistent cervical sinus
- B. First branchial arch, persistent branchial cleft
- C. Second branchial pouch, persistent cervical sinus
- D. Second branchial arch, persistent branchial cleft
- E. Third branchial pouch, persistent cervical sinus



6. ____ A 24 year old woman develops a mass in her neck (see photo above). The mass is located immediately anterior to the sternocleidomastoid muscle. The physician suspects that this condition has result from a branchial cyst. During surgery, the mass is found to be connected to a tract that extends superiorly and medially. The tract is most likely to be connected to which of the following structures?

- A. Middle meatus of the nasal cavity
- B. Pharyngeal tonsil
- C. Tonsillar fossa (palatine tonsils)
- D. Lingual tonsil
- E. Mandibular fossa



7. _____ A young child develops a mass in the midline of the neck (photo above). The mass is located anterior to the hyoid bone, superior to the thyroid cartilage. Palpation of the salivary glands and thyroid gland show that they are normal in size. The child is scheduled for surgical removal of the mass. During surgery, the mass is found to be connected to a tract that courses superiorly. The tract is most likely to be connected to which of the following structures?

- A. foramen cecum of the tongue
- B. lingual tonsil
- C. sublingual papilla
- D. palatine tonsils
- E. submandibular duct



8. ____ A young child is brought to a pediatrician by his parents. The child (photo above) shows micrognathia (small mandible) and downward slanting eyes. Tests of auditory function indicate a hearing loss. The physician suspects that the child has Treacher-Collins syndrome, a congenital disorder associated with malformation of structures that develop in association with the first branchial arch. Which of the following structures normally develops with the first branchial arch and could have been malformed to cause the hearing loss?

- A. Auditory tube
- B. Cochlea
- C. Malleus and Incus
- D. Vestibulocochlear nerve
- E. Stapes

9. ____ Accidental removal of the parathyroid glands during thyroid surgery is the most frequent cause of hypoparathyroidism. The parathyroid glands are typically located on the posterior surface of the thyroid or within the substance of the gland but their location are variable. This variability is due to the multiple origin of the parathyroid glands from the

- A. First and second branchial pouches
- B. Second and third branchial pouches
- C. First and third branchial pouches
- D. Third and fourth branchial pouches
- E. Second and fourth branchial pouches

KEY TO HEAD AND NECK EMBRYOLOGY QUESTIONS

1. B
2. C
3. A
4. B
5. E
6. C
7. A
8. C
9. D