

## Salivary Gland Chapters 37, 38, 39, 40

Shapiro

1. What is the embryologic origin of the major salivary glands, and when do they develop?

Outpouchings of oral ectoderm in the 6<sup>th</sup>-8<sup>th</sup> week

2. What is the embryologic origin of minor salivary glands?

Oral ectoderm and nasopharyngeal endoderm

3. What type of saliva is secreted by the parotid gland?

Serous

4. Where does the facial nerve exit the skull base?

Stylomastoid foramen

5. What muscles does it innervate as it exits the stylomastoid foramen?

Stylohyoid, postauricular, posterior belly of the digastric

6. The greater auricular nerve is a branch of what, and what does it do?

C2-3; sensation to posterior auricle and lobe.

7. The auriculotemporal nerve is a branch of what, and what is its course and function?

Branch of V3. Exits the foramen ovale, parallels the superficial temporal vessels to innervate the scalp. Carries postganglionic parasympathetic fibers from the otic ganglion to the parotid gland, stimulating secretion.

8. What is Frey's syndrome?

Abberant reinnervation of cholinergic sympathetic sweat glands in the skin with postganglionic fibers from the auriculotemporal nerve.

9. How does Botox treat Frey's syndrome?

Blocks release of acetylcholine from presynaptic neurons.

10. What type of saliva is produced by the submandibular gland?

Mucous and serous

11. What is the innervation of the submandibular gland?

Parasympathetic innervation from the chorda tympani, which carries preganglionic parasympathetic fibers to the submandibular ganglion by means of the lingual nerve. Fibers synapse onto postganglionic parasympathetic fibers that stimulate production of saliva.

Sympathetic innervation from superior cervical ganglion.

12. What type of saliva is produced by the sublingual glands?

Mucous

13. What are the sublingual ducts called?

Ducts of Rivinus (approx 10). May form one large duct (Bartholin) into Wharton's duct.

14. What comprises a secretory unit?

Acinar cells, secretory tubules, and collecting duct. Surrounded by myoepithelial cells that contract to expel secretions.

15. Describe the parasympathetic innervation of the salivary glands:

Parotid: (by CN IX). Preganglionic parasympathetic fibers to otic ganglion by tympanic and LSP. Postganglionic fibers via auriculotemporal (V3).

Submax/Sublingual: From chorda tympani, which travels with lingual nerve. Synapse at the submandibular ganglion. Postganglionic fibers secrete acetylcholine (no true synapse between postganglionic fibers and glands).

Muscarinic Ach receptors only involved in salivary gland stimulation.

16. Describe the sympathetic innervation of the salivary glands:

Arise in superior cervical ganglion. Norepinephrine is the neurotransmitter.

Parotid: via middle meningeal artery

Submax: via lingual artery  
Sublingual: via facial artery

17. What is the resting rate of salivary flow per minute?

.001 to 0.2 ml per minute per gland

18. What is the rate of salivary flow when stimulated?

.18 to 1.7 ml/minute/gland

19. Which glands produce the most at rest?

Submax glands (65%)

20. Which glands produce the most when active?

Parotids (>50%)

21. What is a Hounsfield Unit?

Unit of x-ray attenuation (electron density)

22. What is the range of how Hounsfield units are measured?

Air = -1000

Water = 0

Bone = +1000

23. What range of Hounsfield units is parotid gland?

-20 to +20 (+35 post-contrast)

24. How does parotid tissue appear on MRI?

Hyperintense on T1 and closer to fat on T2

25. What divides the parapharyngeal space into pre- and post-styloid compartments?

Tensor veli palatini fascia (line from the medial pterygoid plate to the styloid process).

26. What is the classic triad of Sjogren's Syndrome?

Keratoconjunctivitis, xerostomia, rheumatoid arthritis (10:1 female: male)

27. What will Sjogren's look like on sialogram?

Early stage: multiple punctate contrast collections

Late stage: cavitory lesions with gland destruction/ ductal strictures

27a. What is the difference between primary and secondary Sjogren's?

primary involves exocrine glands only

secondary is associated with autoimmune disease such as RA

28. Which area contains primarily salivary lesions, pre-styloid or post-styloid?

Prestyloid

29. Which pathologies tend to be post-styloid?

Paraganglioma, schwannoma, mets, meningioma, hemangioma,  
chondrosarcoma, rhabdomyosarcoma

30. What is a sialocele? Is it a true cyst?

Post-traumatic cyst following laceration of duct with mucus extravasation.  
No true epithelial lining (pseudocyst).

31. What is the radiographic appearance of pleomorphic adenoma?

CT: well-circumscribed, homo or heterogeneous

MRI: low intensity on T1; hyperintense on T2

32. What is the radiographic appearance of Warthin's Tumor?

CT: well-circumscribed, homogeneous low-density

MRI: intermediate to low intensity on T1; increased signal on T2

33. What is the radiographic appearance of hemangiomas?

CT: well-defined, heterogeneous

MRI: hypointense on T1; marked hyperintense on T2 (mild enhancement post-contrast)

34. What is the radiographic appearance of lipomas?

CT: low attenuation, similar to fat  
MRI: high-intensity on T1; intermediate on T2

35. What is the radiographic appearance of mucoepidermoid CA?

CT: homo- or heterogeneous on CT  
MRI: low or intermediate on T1; hyperintense on T2

36. How does amifostine work?

- a) Chemoprotectant against cis-Platinum to decrease xerostomia/mucositis by binding to cis-Pt metabolites and acts as a free-radical scavenger
- b) Decreases RT-related xerostomia

37. What is the incubation period for mumps?

2 to 3 weeks

38. What are the major complications of mumps?

Hearing loss, pancreatitis, meningitis, orchitis

39. Why is parotitis more common than submandibular gland sialadenitis?

Mucinous saliva of submax gland is more bacteriostatic: the glycoprotein and sialic acid content of mucus saliva has greater bacterial aggregating ability than does serous saliva. Also has higher concentrations of lysozymes and IgA.

40. What are the most common organisms cultured in acute bacterial sialadenitis?

s. aureus, s. pneumo, e.coli, h.flu; b. melaninogenicus, s. micros.

41. What is Heerfordt syndrome?

Uveoparotid fever: (seen in sarcoidosis): uveitis, parotid enlargement, facial paralysis. (fever, weakness, nausea, night sweats)  
Can last months to years. Treatment is steroids. Facial paralysis is transient.

42. What are most salivary calculi made of ?

Calcium phosphate

43. What are calculi associated with gout made of?

Uric acid

44. How do submandibular calculi appear on plain film?

Radioopaque

45. How do parotid calculi appear on plain film?

Radiolucent

46. Describe the types of first branchial cleft cysts:

Type 1: ectodermal lesion of first arch; duplication anomaly of membranous external auditory canal.

Type 2: ectodermal and mesodermal of first and second arches; duplication of membranous and cartilaginous eac

47. What is the facial landmark which delineates necessity to repair a facial nerve injury?

Vertical line from lateral canthus to mental foramen