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300level

Gross anatomy of head and neck assignment

ANA 301

**Questions**

1. Write an essay on the cavernous sinus.
2. Discuss the wall of the nose

**Answers**

* The cavernous sinus, a large venous plexus, is located on each side of the sella turcica on the upper surface of the body of the sphenoid, which contains the sphenoid (air) sinus. The cavernous sinus consists of a venous plexus of extremely thin-walled veins that extends from the superior orbital fissure anteriorly to the apex of the petrous part of the temporal bone posteriorly. It receives blood from the superior and inferior ophthalmic veins, superficial middle cerebral vein, and sphenoparietal sinus. The venous channels in these sinuses communicate with each other through venous channels anterior and posterior to the stalk of the pituitary gland—the intercavernous sinuse and sometimes through veins inferior to the pituitary gland. The cavernous sinuses drain postero-inferiorly through the superior and inferior petrosal sinuses and emissary veins to the basilar and pterygoid plexuses. Inside each cavernous sinus is the internal carotid artery with its small branches, surrounded by the carotid plexus of sympathetic nerve(s), and the abducent nerve (CN VI). The oculomotor (CN III) and trochlear (CN IV) nerves, plus two of the three divisions of the trigeminal nerve (CN V) are embedded in the lateral wall of the sinus. The artery, carrying warm blood from the body’s core, traverses the sinus filled with cooler blood returning from the capillaries of the body’s periphery, allowing for heat exchange to conserve energy or cool the arterial blood. This does not appear to be as important in humans as it is in running animals (e.g., horses and cheetahs) in which the carotid artery runs a longer, more tortuous course through the cavernous sinuses, allowing cooling of blood before it enters the brain. Pulsations of the artery within the cavernous sinus are said to promote propulsion of venous blood from the sinus, as does gravity. The superior petrosal sinuses run from the posterior ends of the veins making up the cavernous sinus to the transverse sinuses at the site where these sinuses curve inferiorly to form the sigmoid sinuses. Each superior petrosal sinus lies in the anterolateral attached margin of the tentorium cerebelli, which attaches to the superior border (crest) of the petrous part of the temporal bone. The inferior petrosal sinuses also commence at the posterior end of the cavernous sinus. Each inferior petrosal sinus runs in a groove between the petrous part of the temporal bone and the basilar part of the occipital bone. The inferior petrosal sinuses drain the cavernous sinus directly into the transition of the sigmoid sinus to the IJV at the jugular foramen (Fig. 7.31B). The basilar plexus connects the inferior petrosal sinuses and communicates inferiorly with the internal vertebral venous plexus (Figs. 7.29B and 7.33). Emissary veins connect the dural venous sinuses with veins outside the cranium. Although they are valveless and blood may flow in both directions, flow in the emissary veins is usually away from the brain. The size and number of emissary veins vary; many small ones are unnamed. A frontal emissary vein is present in children and some adults. It passes through the foramen cecum of the cranium, connecting the superior sagittal sinus with veins of the frontal sinus and nasal cavities. A parietal emissary vein, which may be paired bilaterally, passes through the parietal foramen in the calvaria, connecting the superior sagittal sinus with the veins external to it, particularly those in the scalp. A mastoid emissary vein passes through the mastoid foramen and connects each sigmoid sinus with the occipital or posterior auricular vein. A posterior condylar emissary vein may also be present, passing through the condylar canal, connecting the sigmoid sinus with the suboccipital venous plexus.
* The nasal cavities have a roof, floor, and medial and lateral walls. • The roof of the nasal cavities is curved and narrow, except at its posterior end, where the hollow body of the sphenoid forms the roof. It is divided into three parts (frontonasal, ethmoidal, and sphenoidal) named from the bones forming each part.
* The floor of the nasal cavities is wider than the roof and is formed by the palatine processes of the maxilla and the horizontal plates of the palatine bone.
* The medial wall of the nasal cavities is formed by the nasal septum.
* The lateral walls of the nasal cavities are irregular owing to three bony plates, the nasal conchae, which project inferiorly, somewhat like louvers.