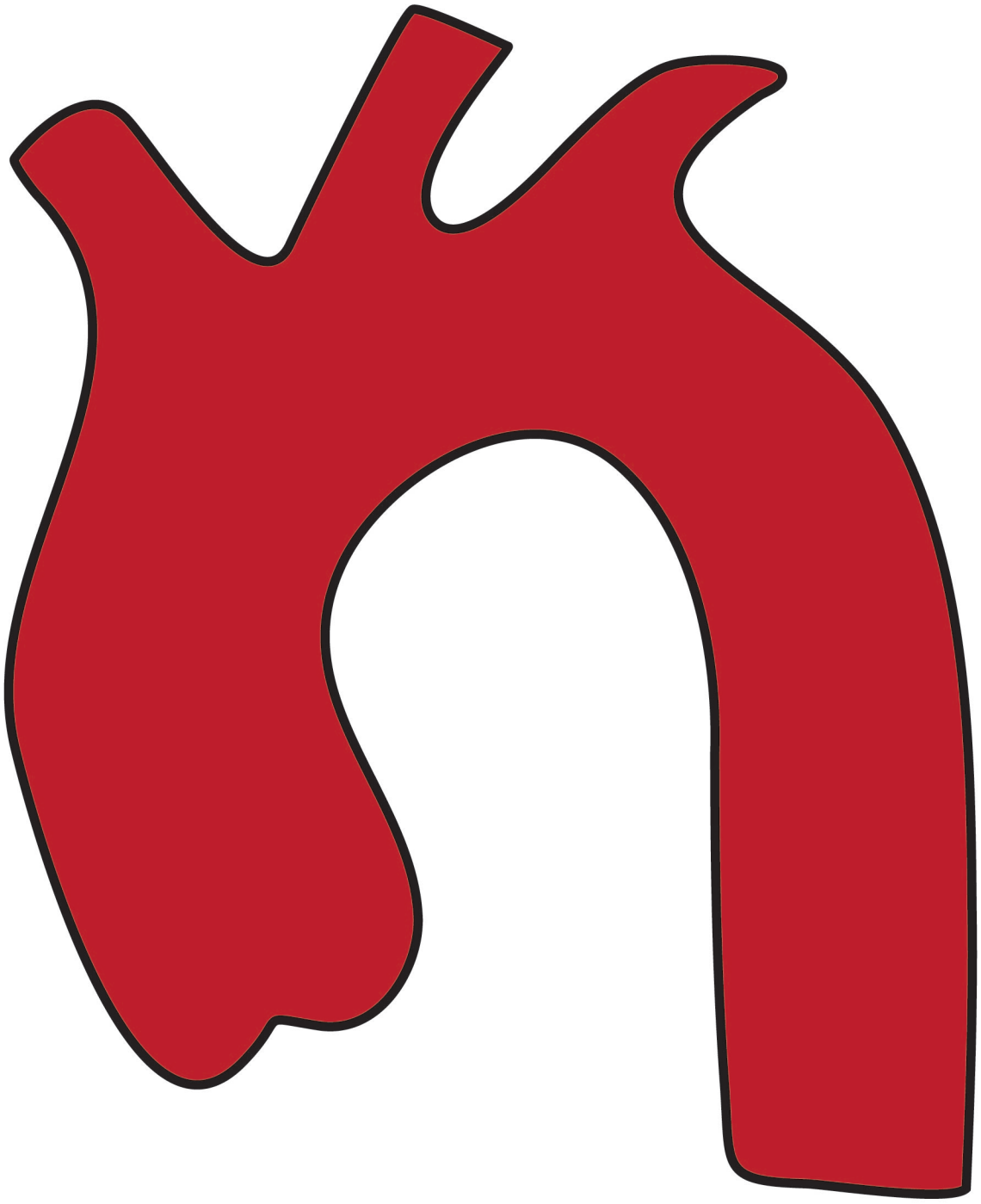
Peristence & Creativity

Anatomy Comics, Objective 4.5

Simple Comix

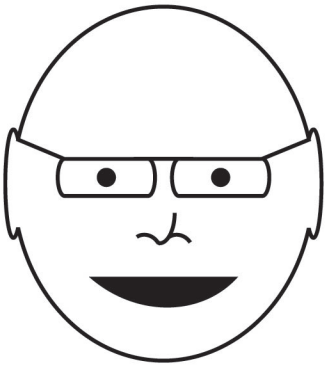
4.5 Trace the flow of blood from the arch of the aorta through its branches to their target structures in the neck. Demonstrate the thyroid gland in the neck, its blood supply, venous drainage and its relationship to deep fascia, nerves, vessels, and other structures.



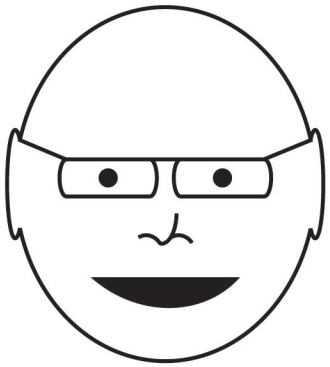
1. A 30 year old man presents to the ED after being stabbed in the neck. The ED physicians want to know if the right vertbral artery is injured, what do you tell them based on the CT images below?

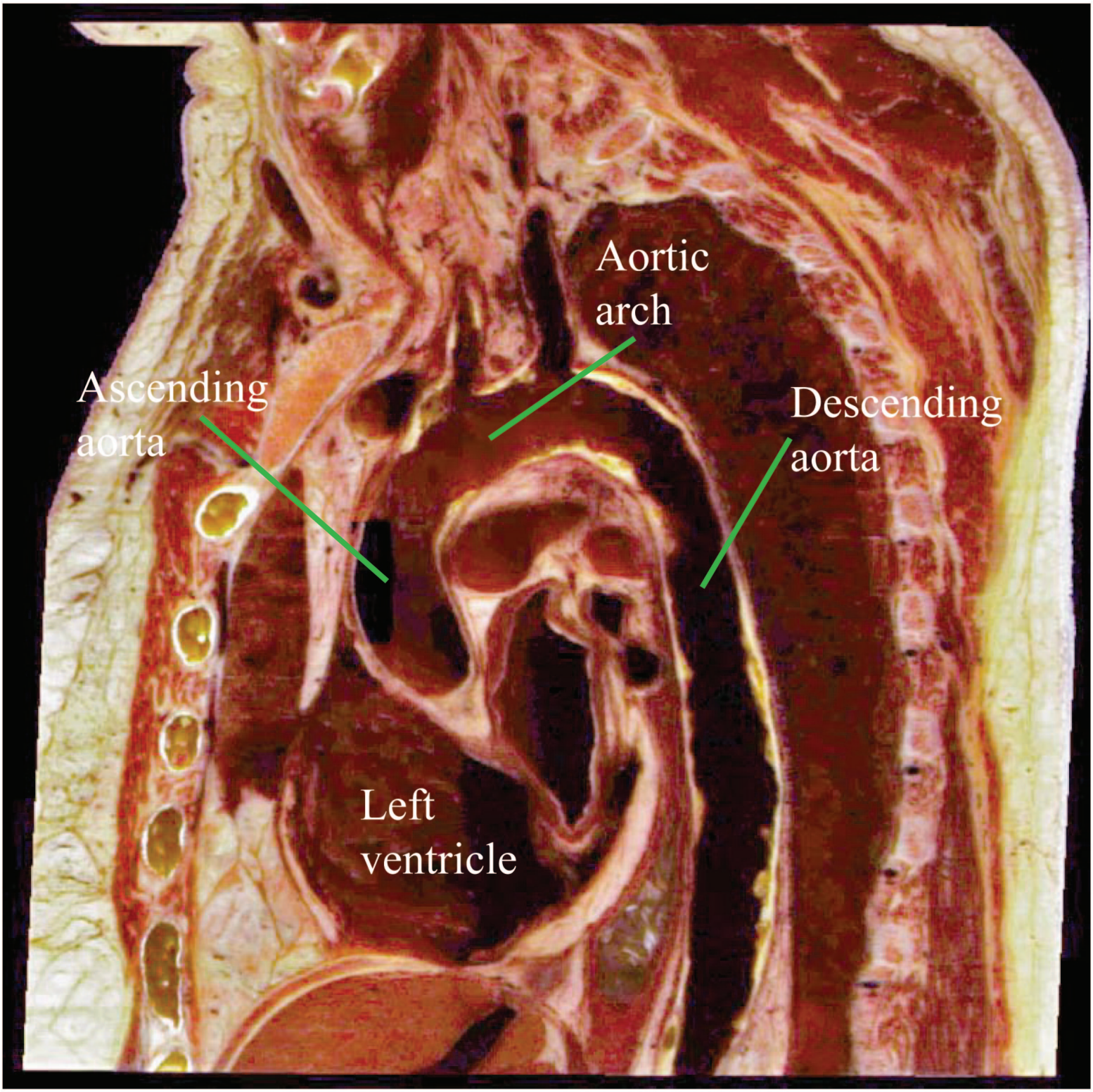
A. The vertebral artery is normal
B. The vertebral artery is occluded
C. The vertebral artery is actively bleeding
D. The vertebral artery has a pseudoaneurysm

The answer is A, the vertebral artery is normal, as shown in both coronal and axial planes. I have labelled the vertebral, the subclavian and the carotid arteries. We'll look more closely at the anatomy of these and other vessels using drawings and images from the visible human project.

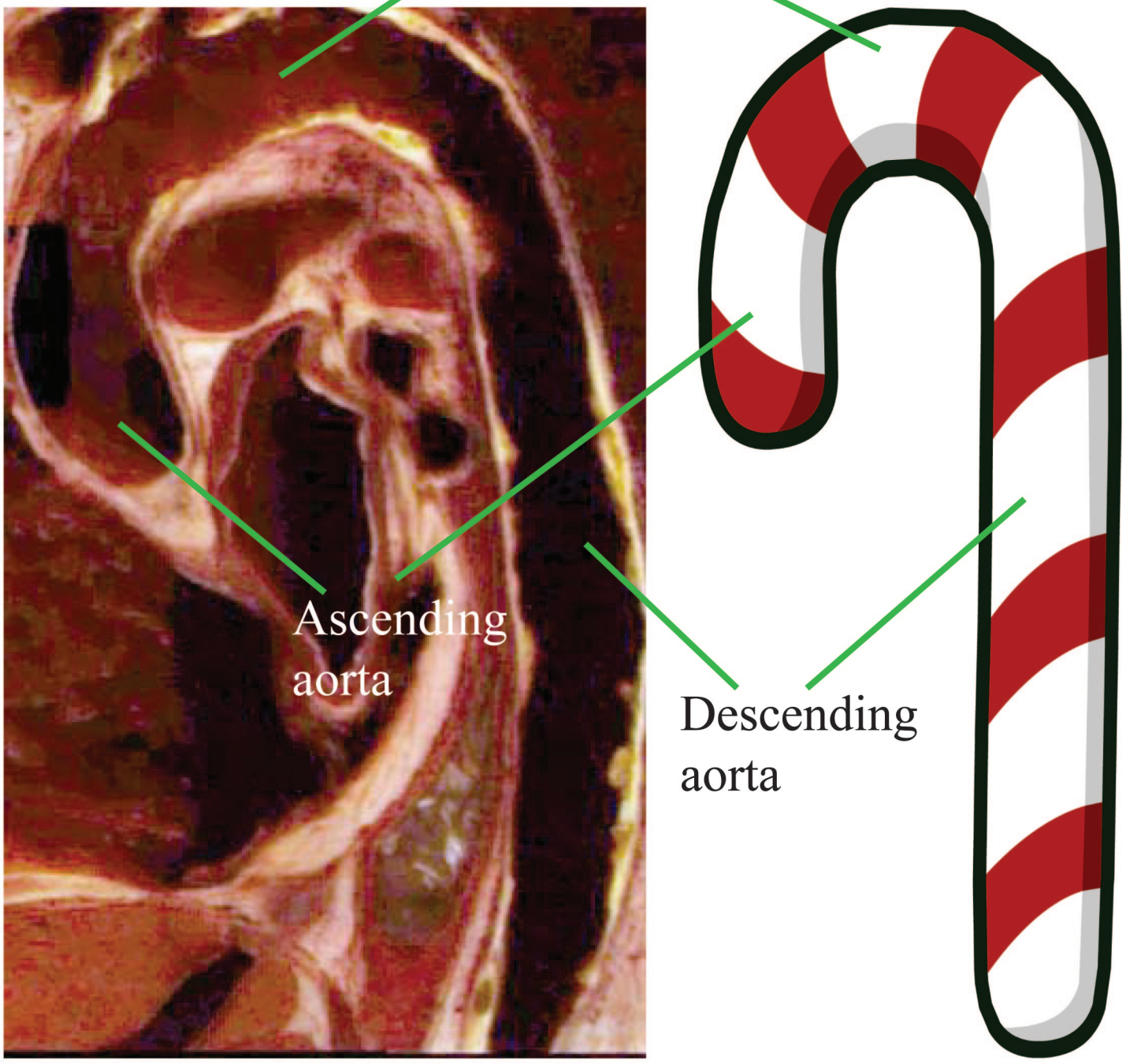


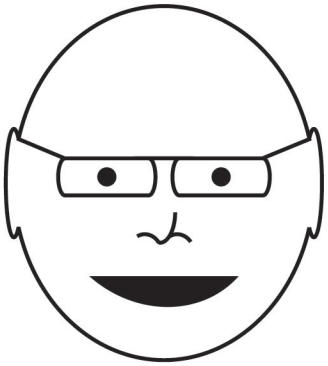
We'll start by naming the three divisions of the aorta in the chest on this oblique sagittal (don't sweat the oblique part) image from the visible human project. The left ventricle gives rise to the ascending aorta, which bends posteriorly to become the aortic arch, which in turn bends inferiorly to become the descending aorta.



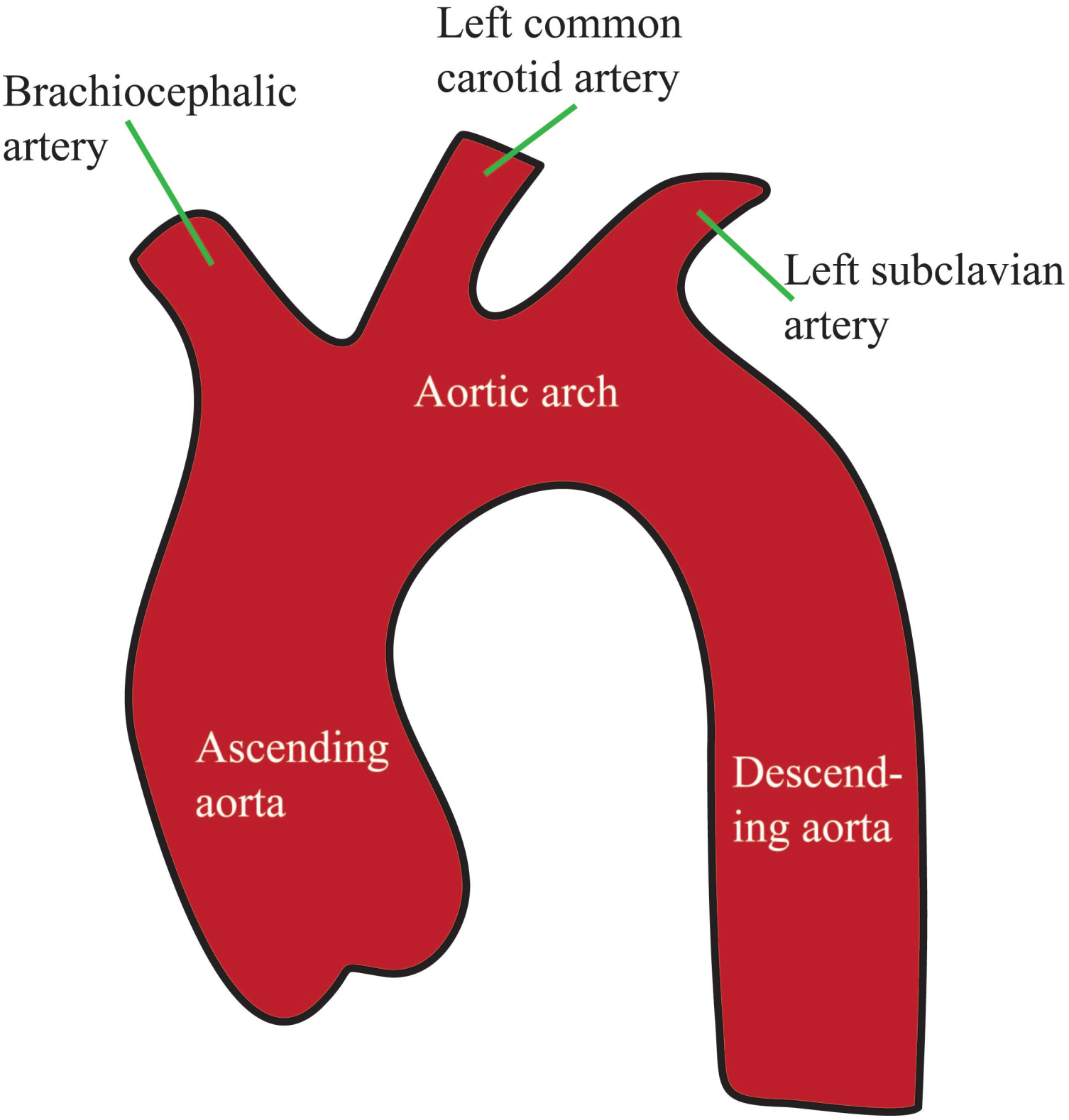


Think of the thoracic aorta as a candy cane: the short part is the ascending aorta, the more horizontal part is the aortic arch and the long segment is the descending aorta. In most people, 3 large vessels arise from the aortic arch, we'll look at them in the next panel.

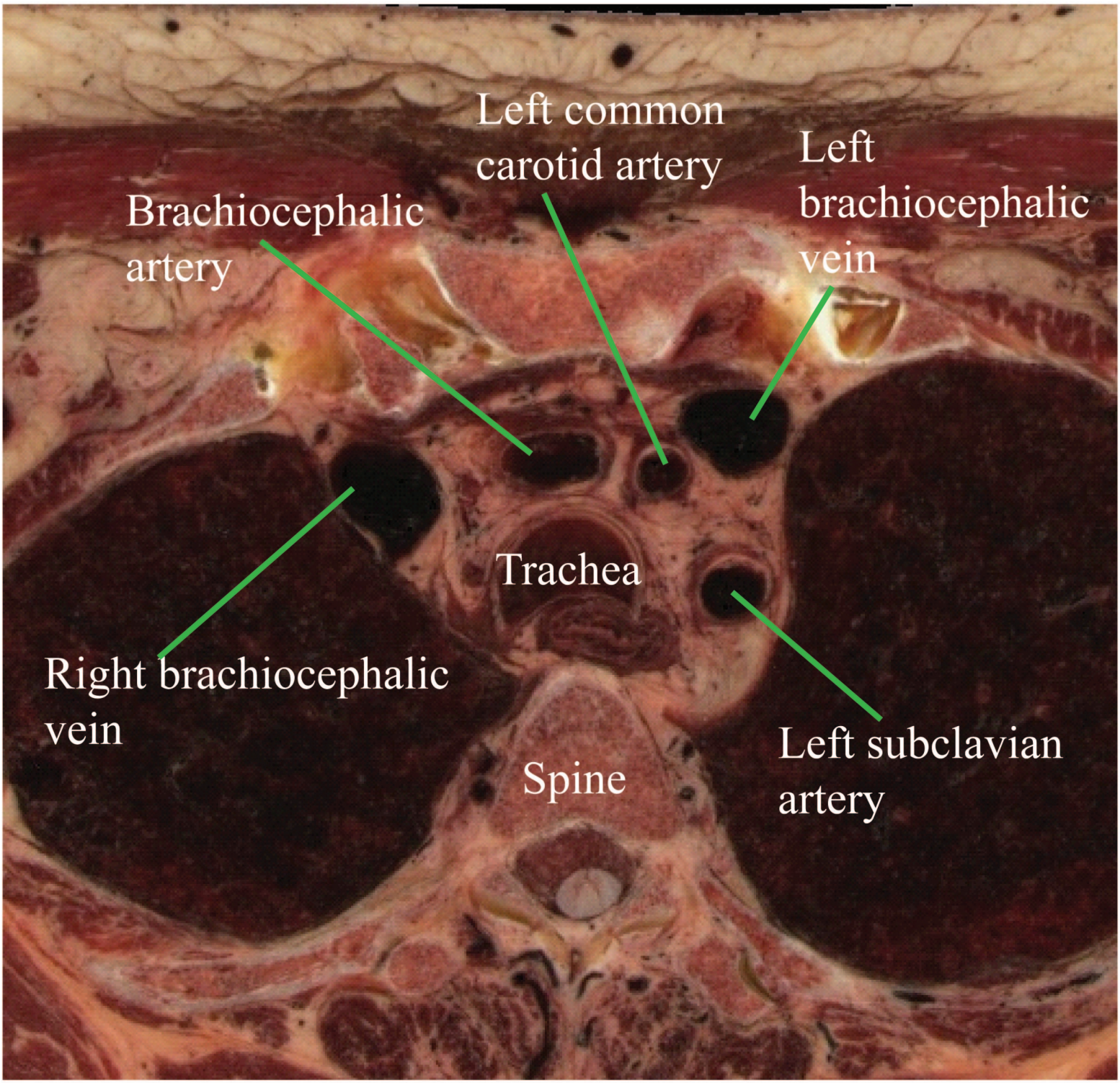


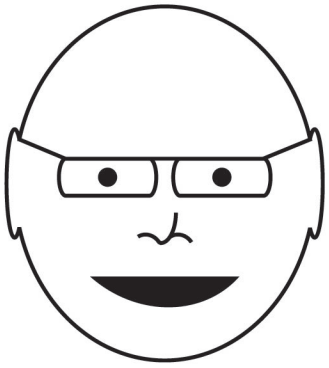


The three vessels that arise from the aortic arch (first to last) are: the brachiocephalic artery, the left common carotid artery and the left subclavian artery. Go ahead and draw them, I'll wait.

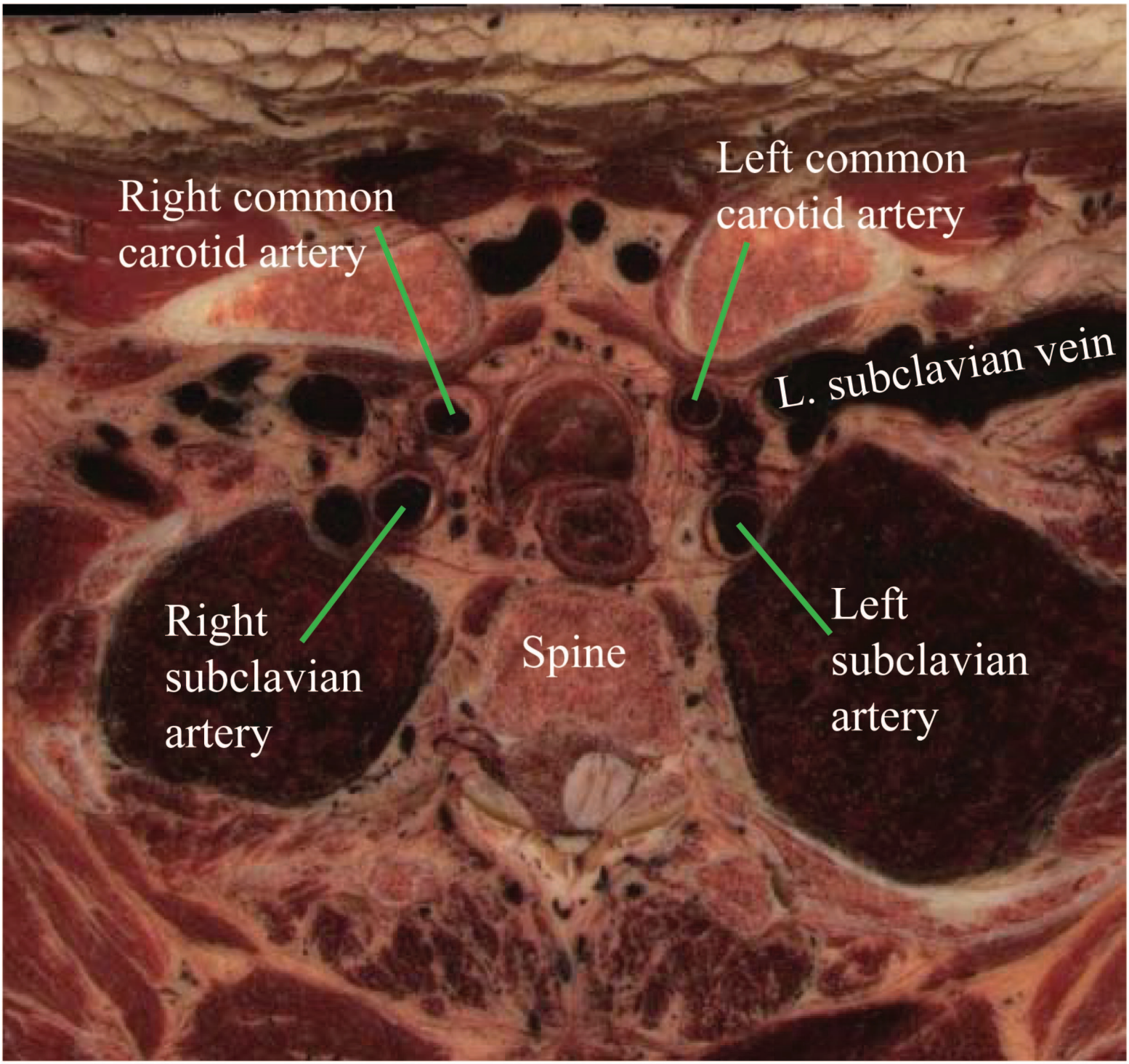


Let's see what those vessels look like on an axial image just above the aortic arch. Note that the arteries are smaller and thicker walled than the veins.

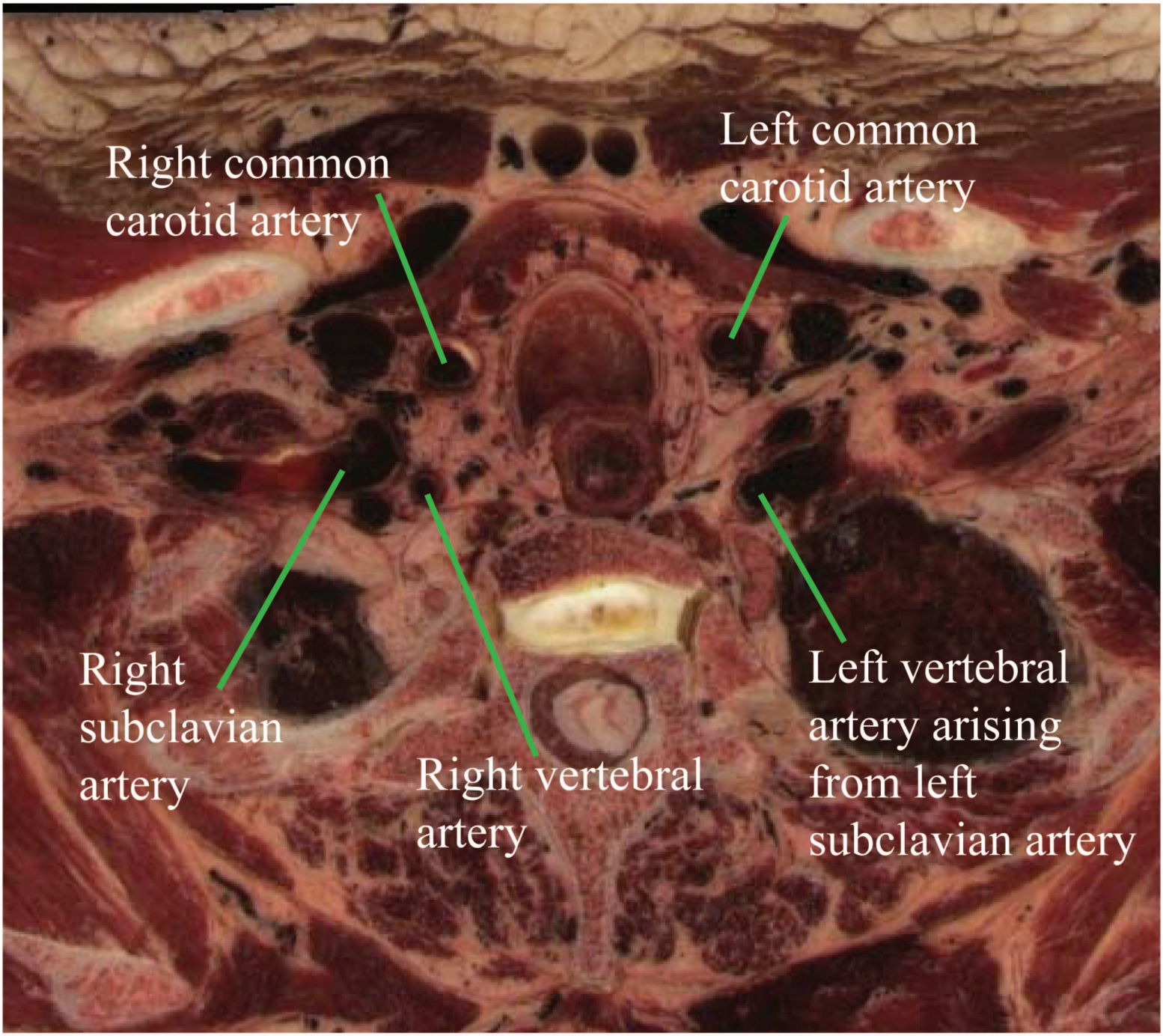


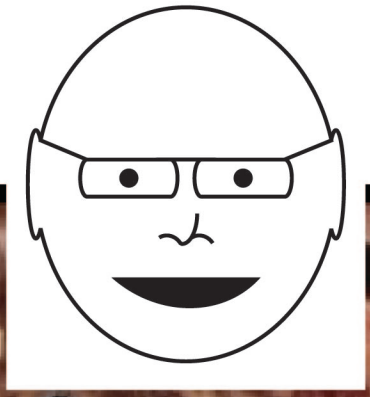


Let's look at an axial image a few centimeters higher, up toward the head. By this point the brachiocephalic artery has split in two, giving us the right subclavian artery and the right common carotid artery. At this level the right and left sides are symmetric, which makes the anatomy easier.



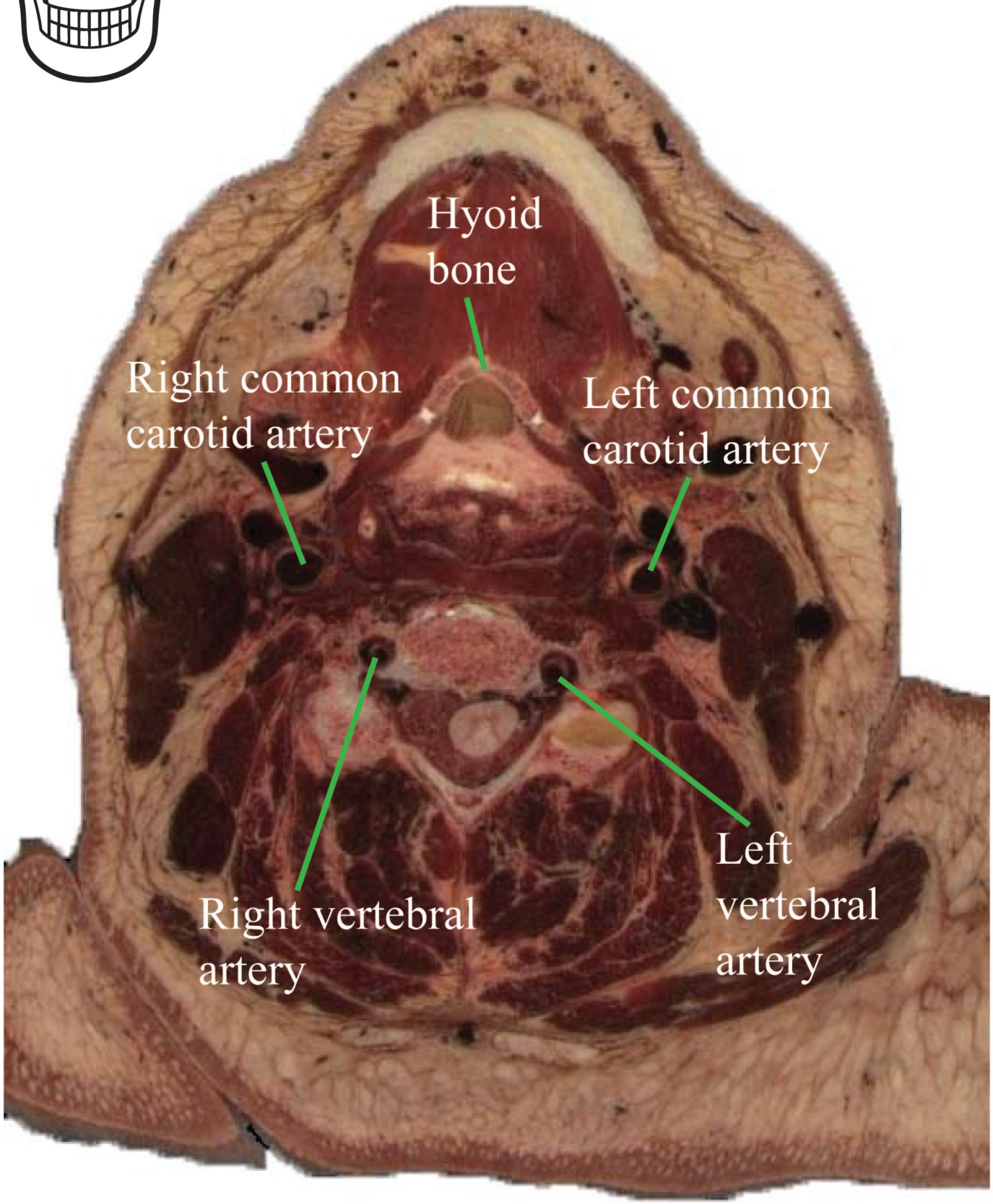
There are 4 large arteries that extend from the chest into the neck, 2 comon carotid arteries and 2 vertebral arteries. We have already seen the common carotids; eventually they split into the external and internal carotids and supply the head/neck and brain respectively. We'll take a closer look at the carotids in future comics. The vertebrals arise from the subclavian arteries and ascend in the neck through the transverse foramina of the cervical vertebrae.

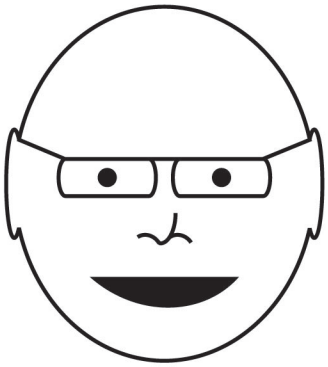




This coronal image shows the verts (that's what you say when you are in the know) arising from the subclavians.

This final image obtained at the level of the hyoid bone shows the common carotids and the vertebral arteries with the verts in the transverse foramina.





That was by no means an exhaustive look at the arteries of the neck, there are many more that we will look at in lab and in future dissesctions, but what we just covered is absolutely fundamental knowledge.

Indeed.