

Peristence
& Creativity

Anatomy Comics, Objective 15.4

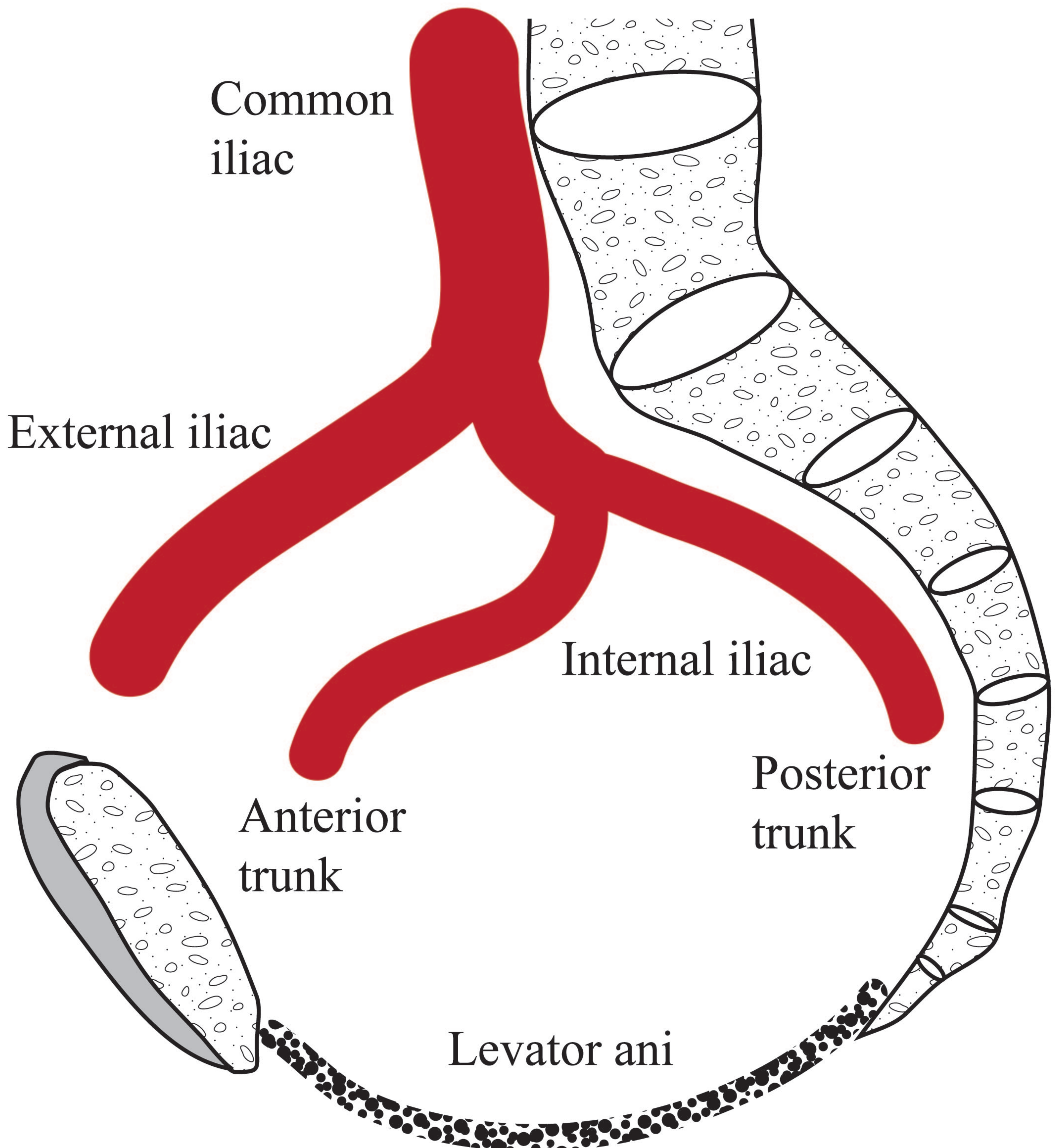


Simple
Comix

15.4 Follow the flow of blood into and out of the structures of the pelvis and perineum.

Identify the lymphatic drainage of structures in the pelvis and perineum.

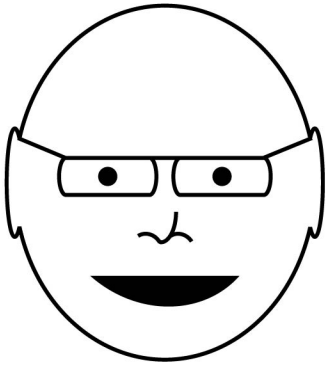
Including the sites of aggregations of lymph nodes receiving lymphatic drainage from various areas of the pelvis and perineum (whether or not they are dissectable in your cadaver).



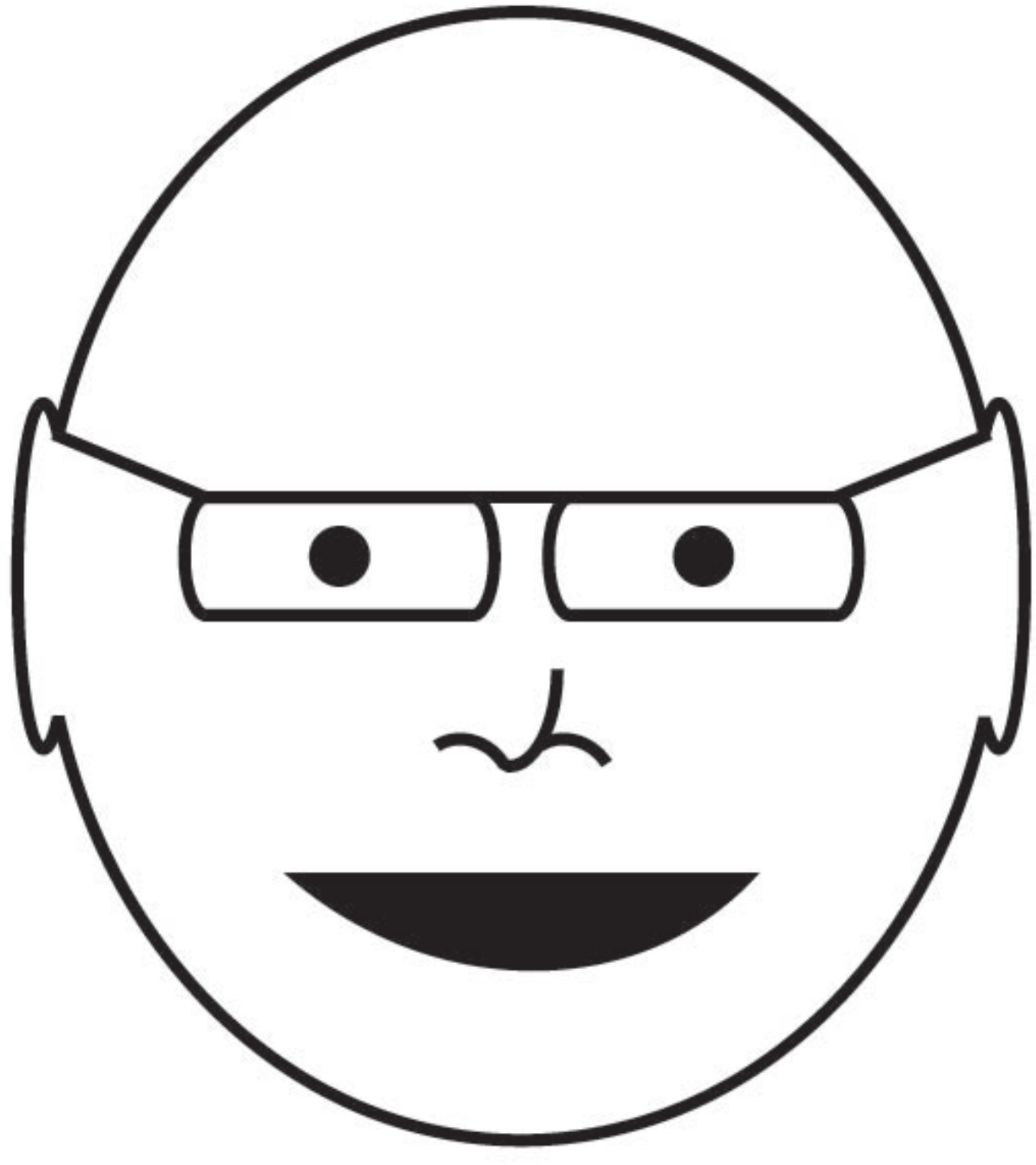
1. A 30 year old man presents after a motor vehicle collision. Which left sided ligaments are torn?

- A. Anterior sacro-iliac
- B. Posterior sacro-iliac
- C. Sacrotuberous
- D. Sacrospinous
- E. All of the above

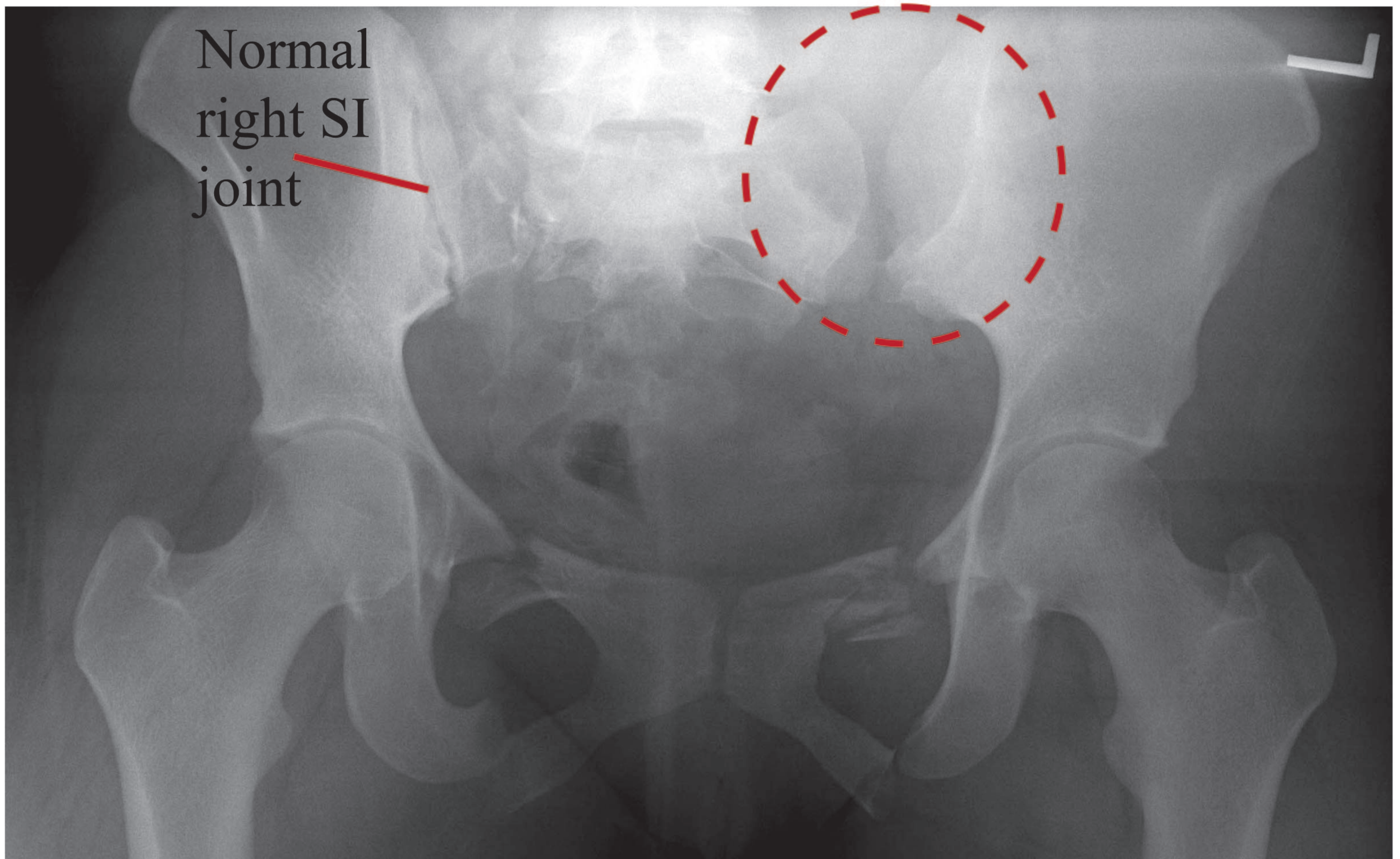
That's a dirty trick, you're asking about Objective 2.1!



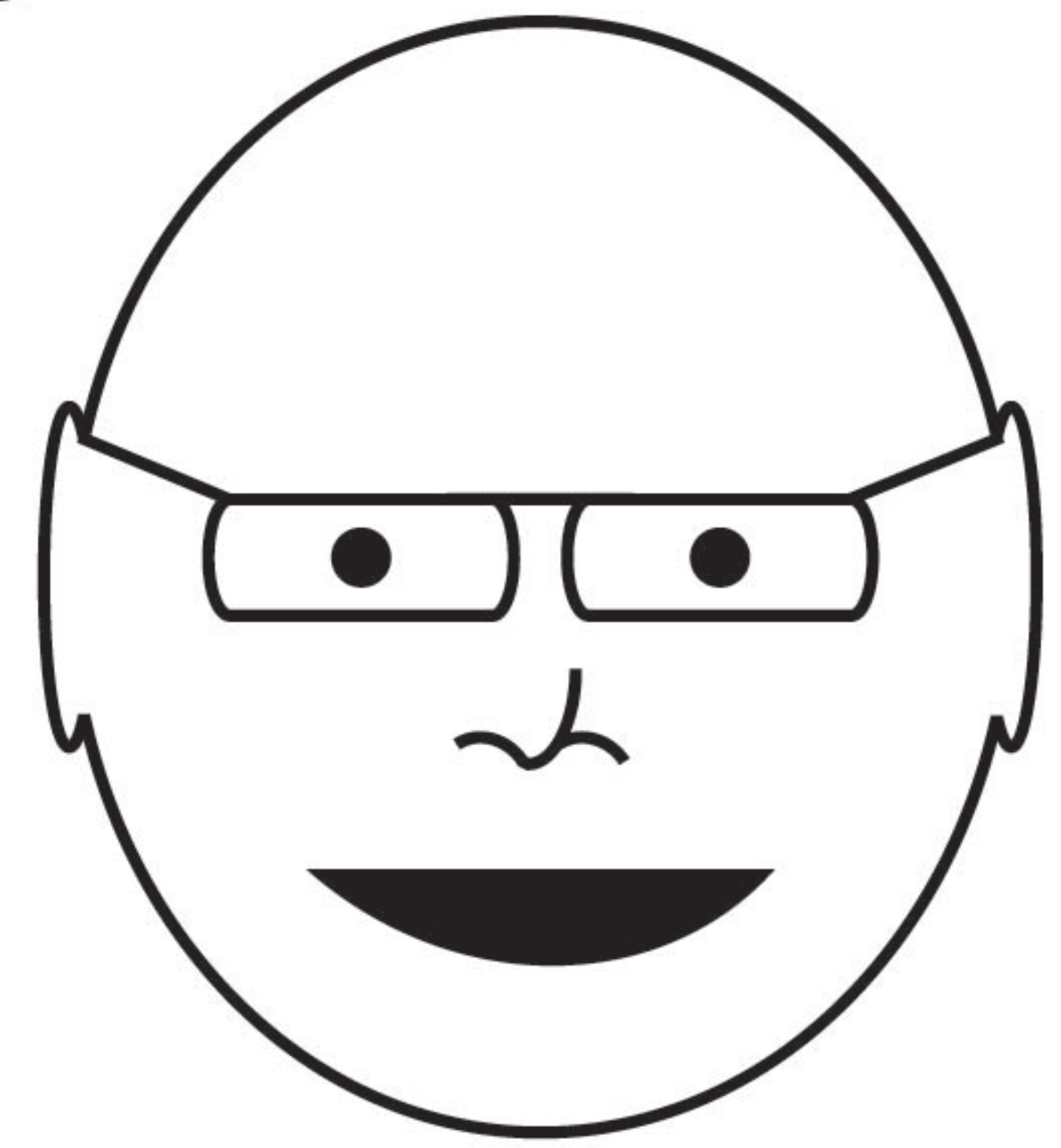
Indeed, and the tricks are only going to get dirtier! The answer to the question is E, all of the above. In order to tear the left innominate bone completely away from the rest of the pelvis, all of the ligaments that hold the sacrum to the innominate bone must be torn. Look at the gap (red circle) between the sacrum and the left innominate bone and compare to the normal right sacroiliac joint.



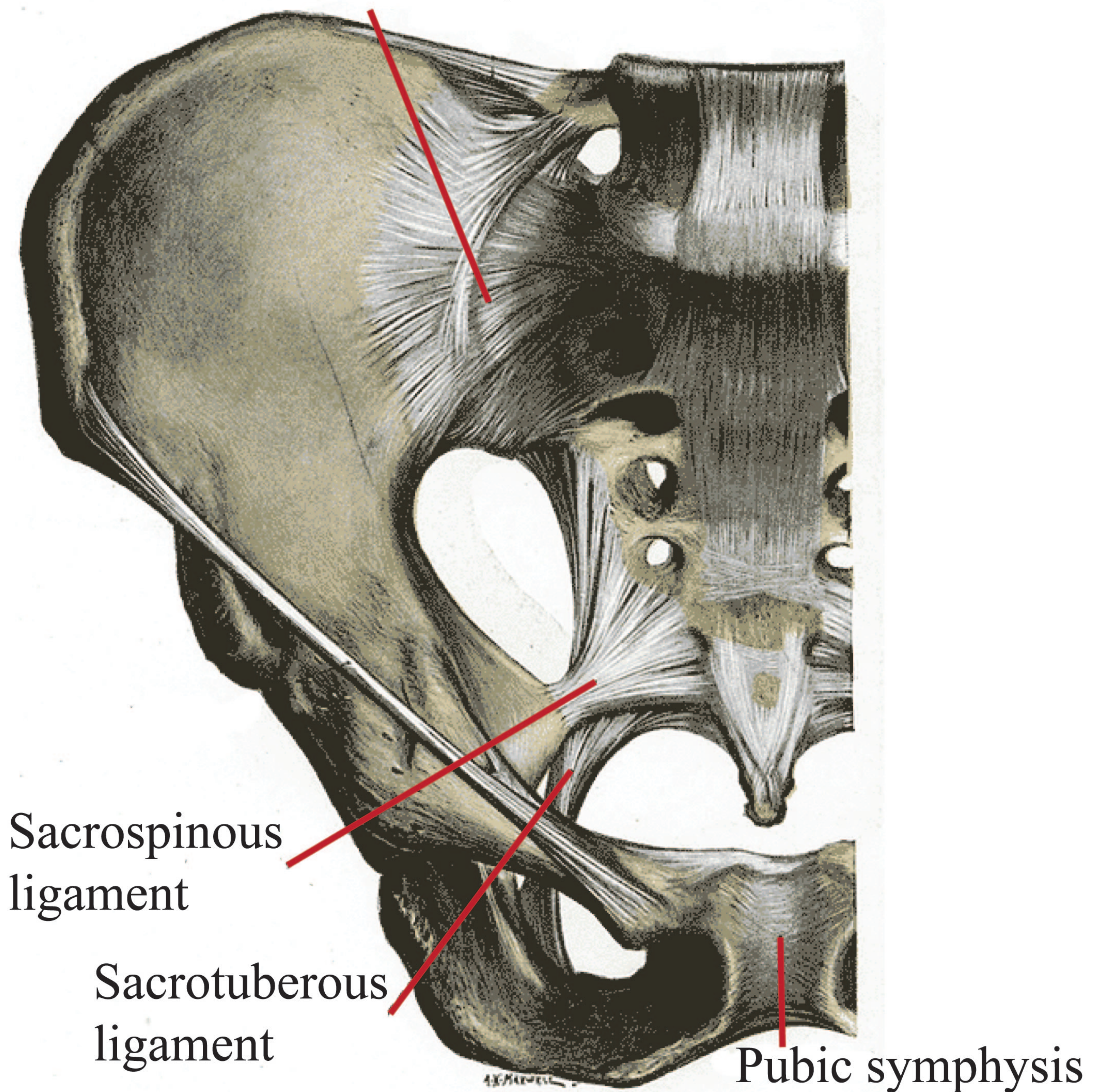
It must take a tremendous amount of force to produce this injury!



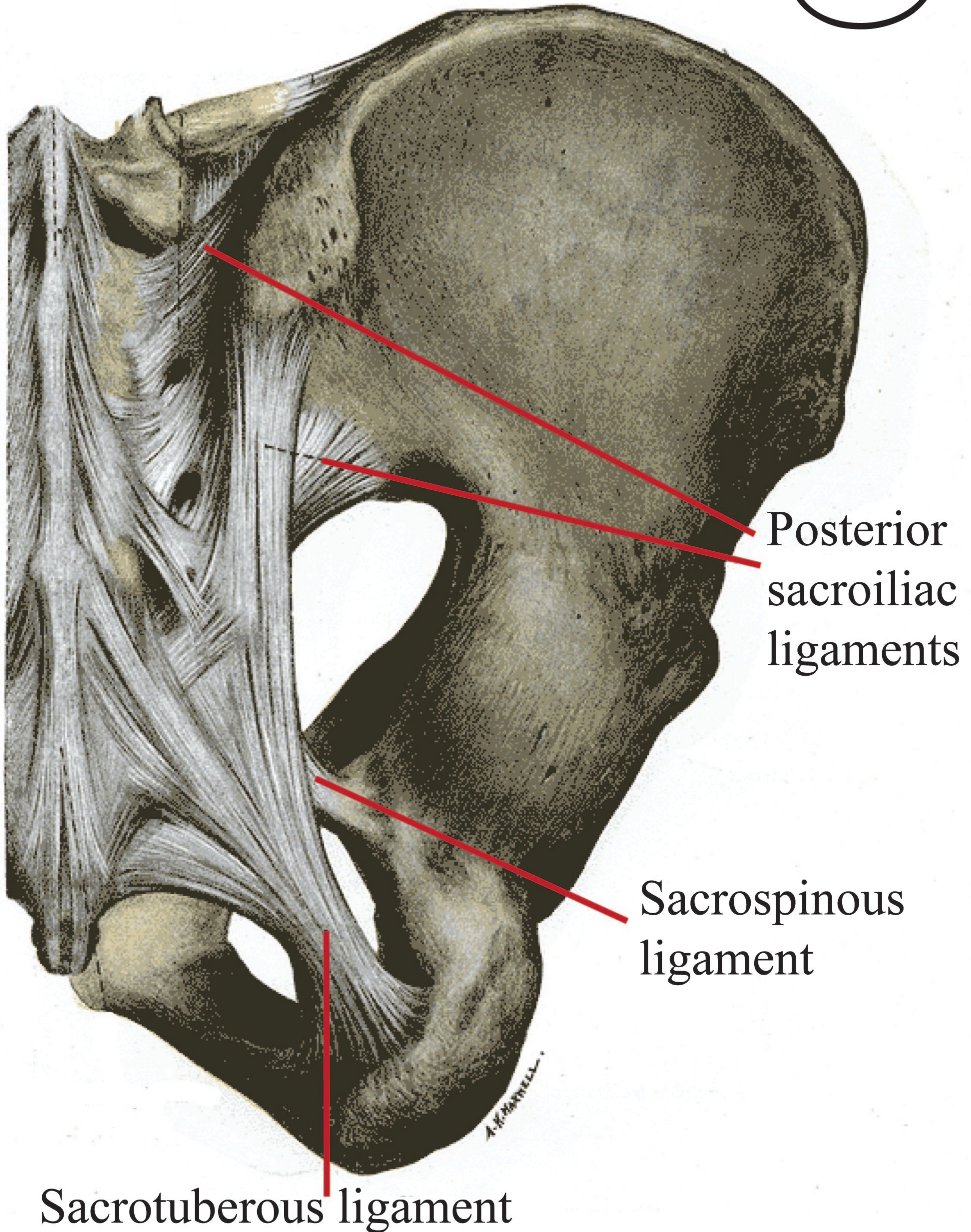
Indeed, it does take a lot of force to tear these ligaments. I have labelled the ligaments that hold the pelvis together on this illustration taken from Gray's Anatomy.



Anterior sacroiliac ligament



This image from Gray's Anatomy shows the ligaments from behind.



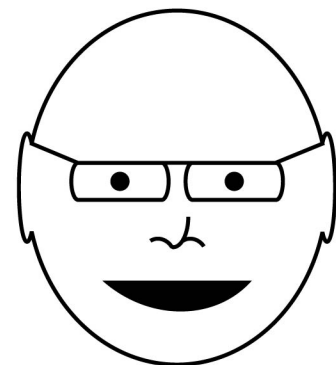
Posterior
sacroiliac
ligaments

Sacrospinous
ligament

Sacrotuberous ligament

2. The patient is hypotensive and undergoes a pelvic arteriogram. Which left sided artery is injured?

- A. External iliac
- B. Superior gluteal
- C. Inferior gluteal
- D. Internal pudendal



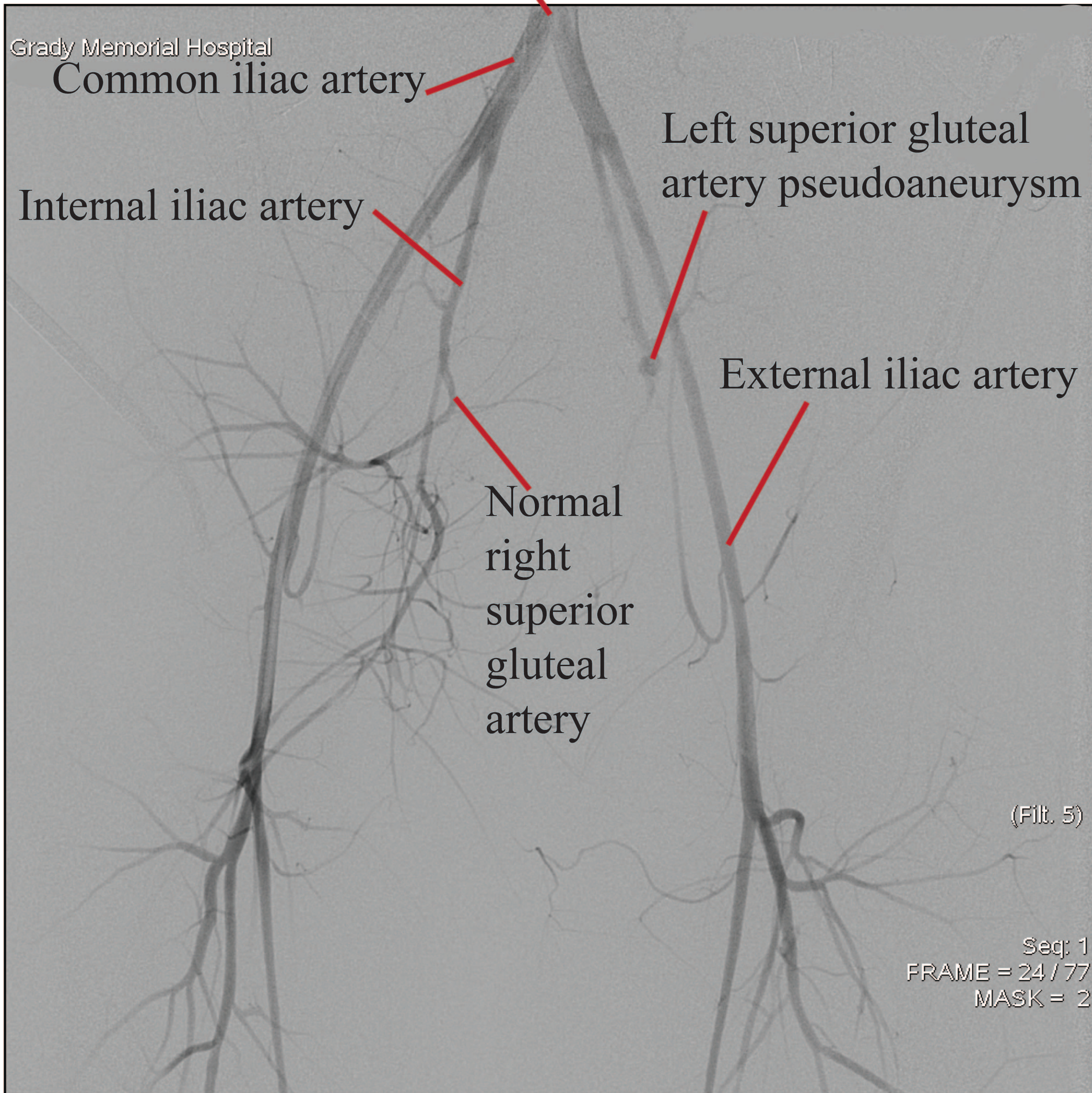
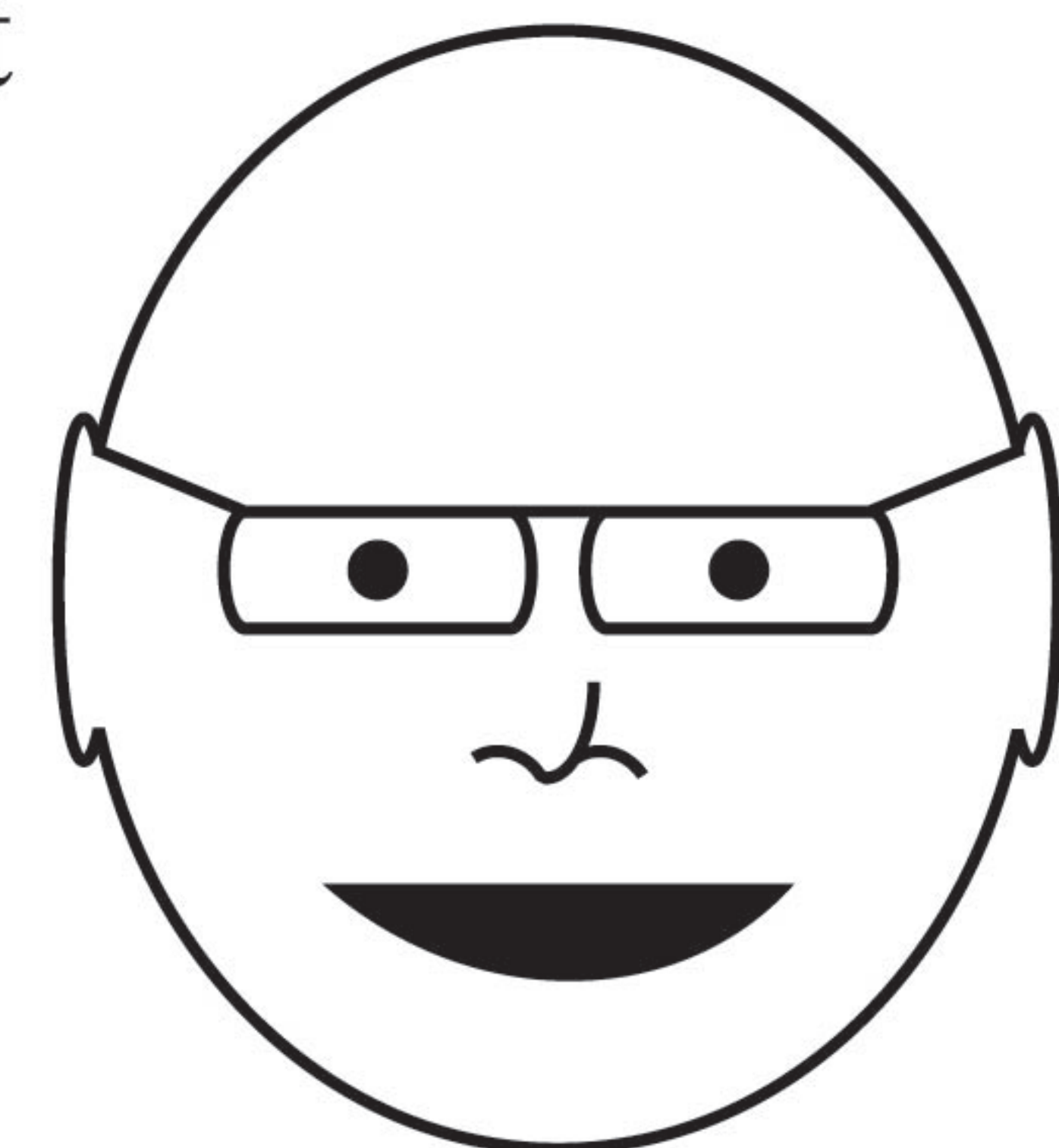
Grady Memorial Hospital



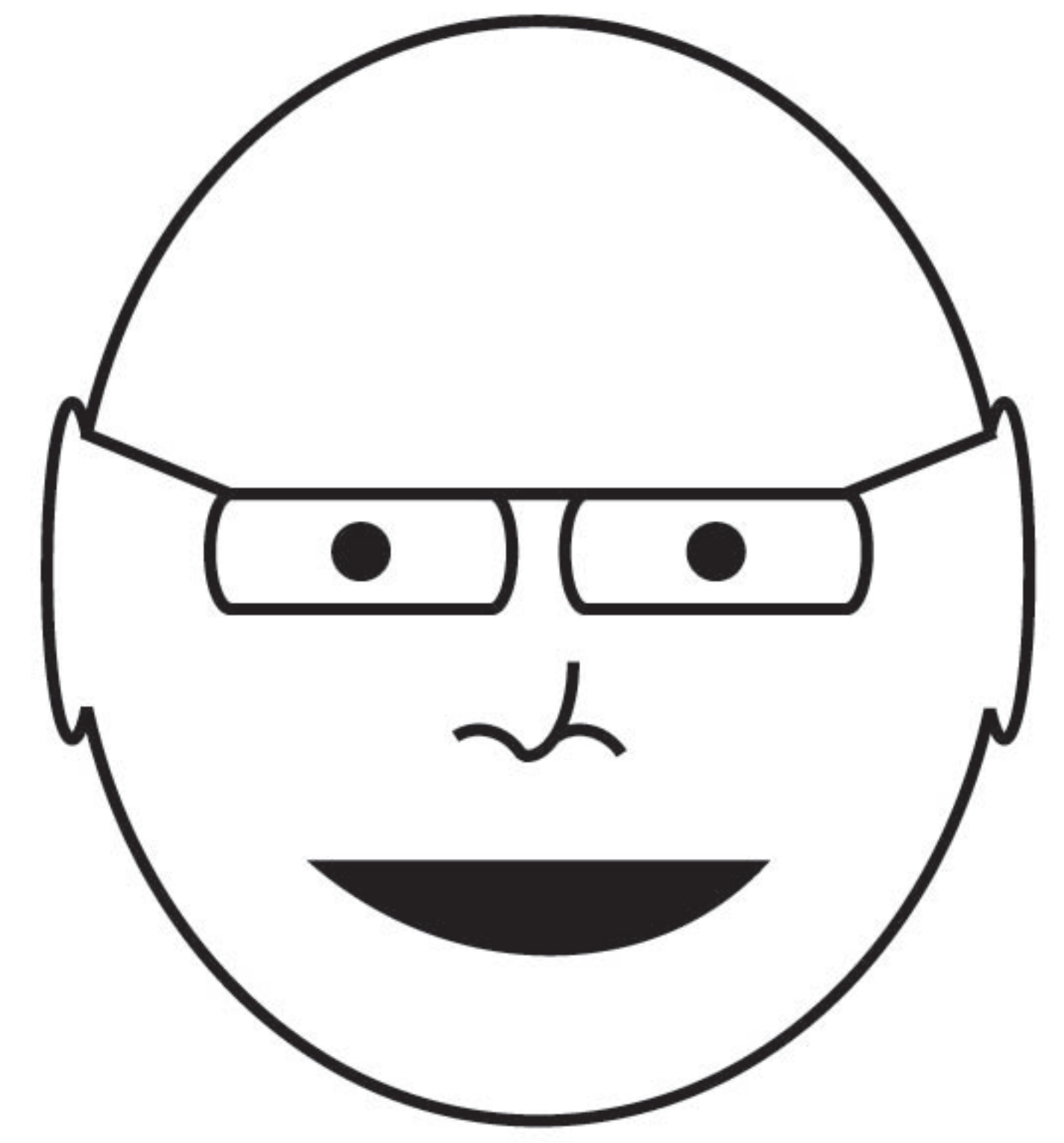
(Filt. 5)

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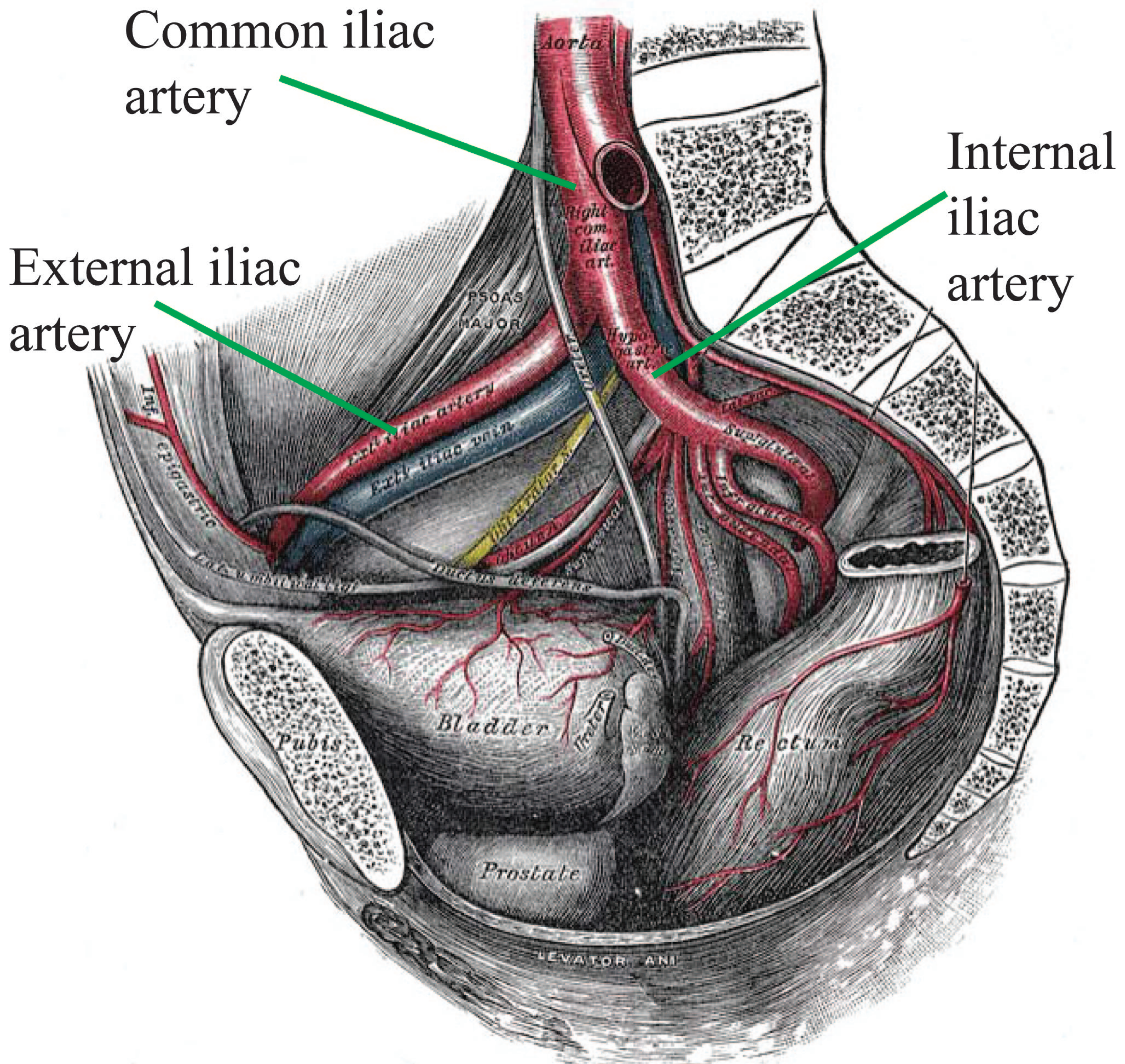
The answer is B, there is a pseudoaneurym (contained rupture) of the left superior gluteal artery. The left internal iliac artery at about its division into anterior and posterior trunks is not opacified and is also injured.



Another dirty trick, that's objective 2.5!

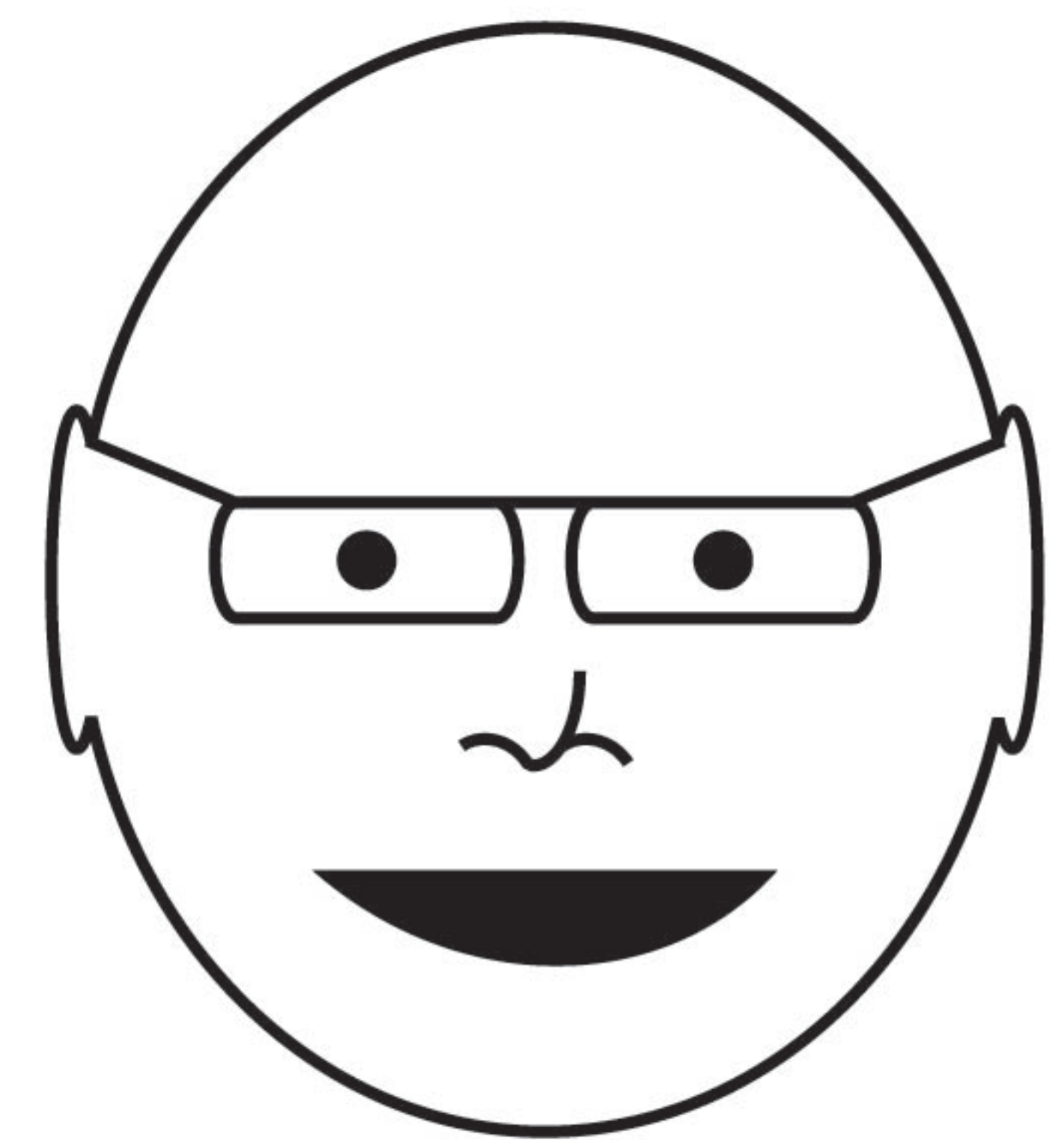


True, but a little review never hurt anyone. Plus it gives us an excuse to learn the pelvic arterial supply. Remember that the common iliac artery divides into the external and internal iliac arteries. The external iliac supplies the leg, today we'll learn some of the internal iliac branches.

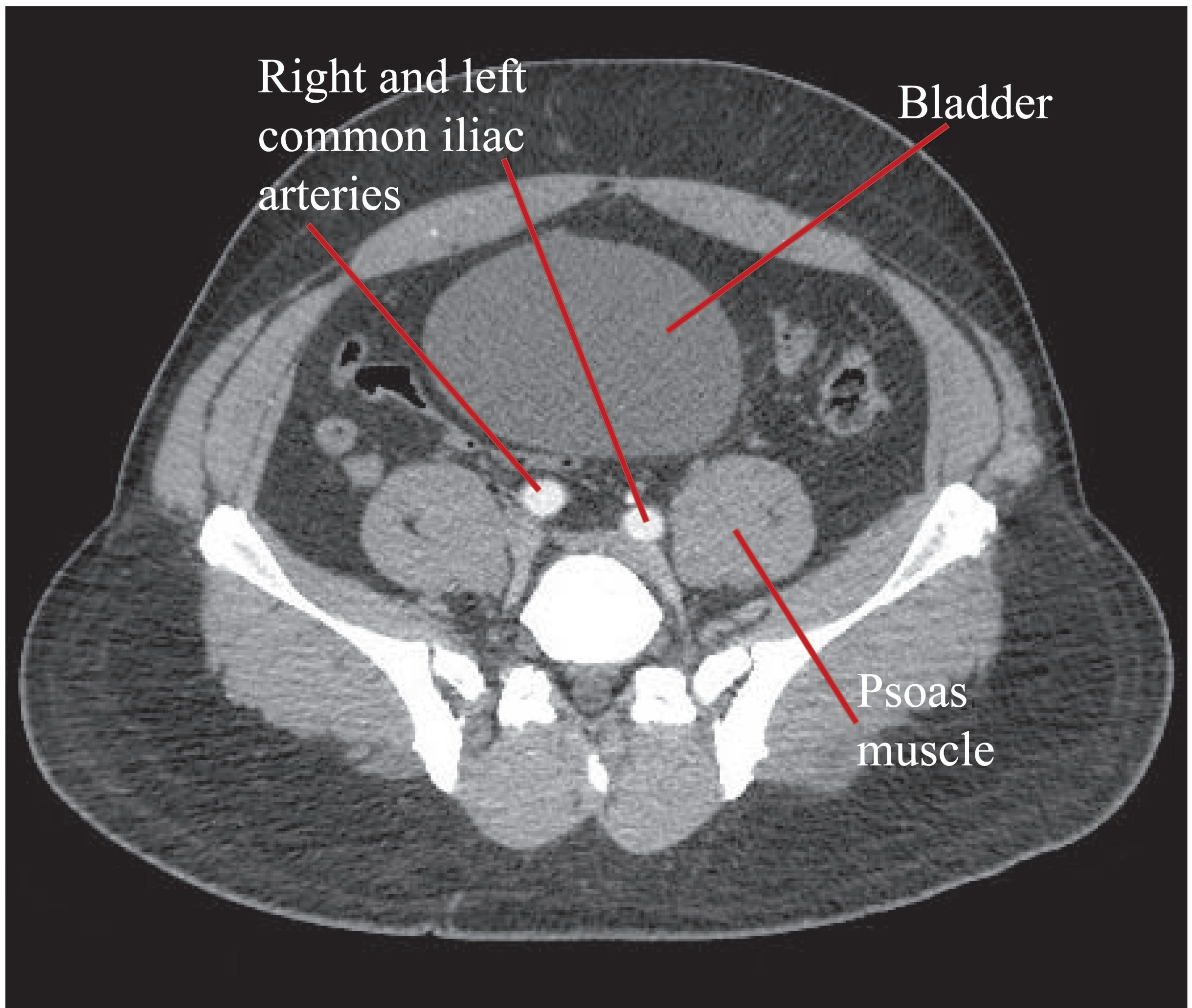




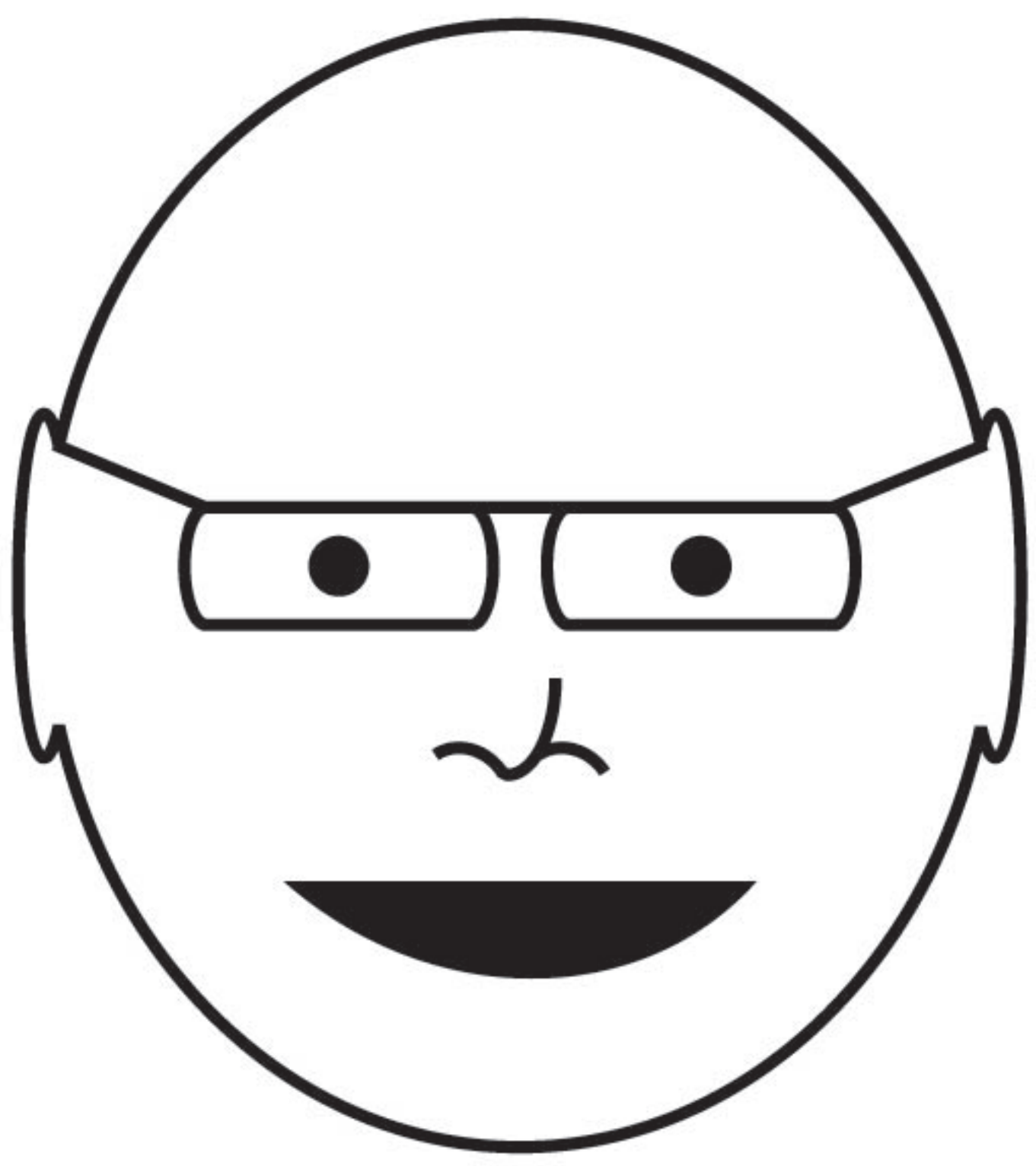
Unfortunately, the visible human images for the pelvic vasculature are poor, so we will have to rely mainly on CT images.



Yep. They are more easily seen on CT, but even on CT, the smaller vessels are difficult to see. On top of that, there is some variability in these vessels, so we will restrict ourselves to a few large arteries. We'll start where we left off in the last comic, with the common iliac arteries.



The common iliacs split into the external and internal iliac arteries.

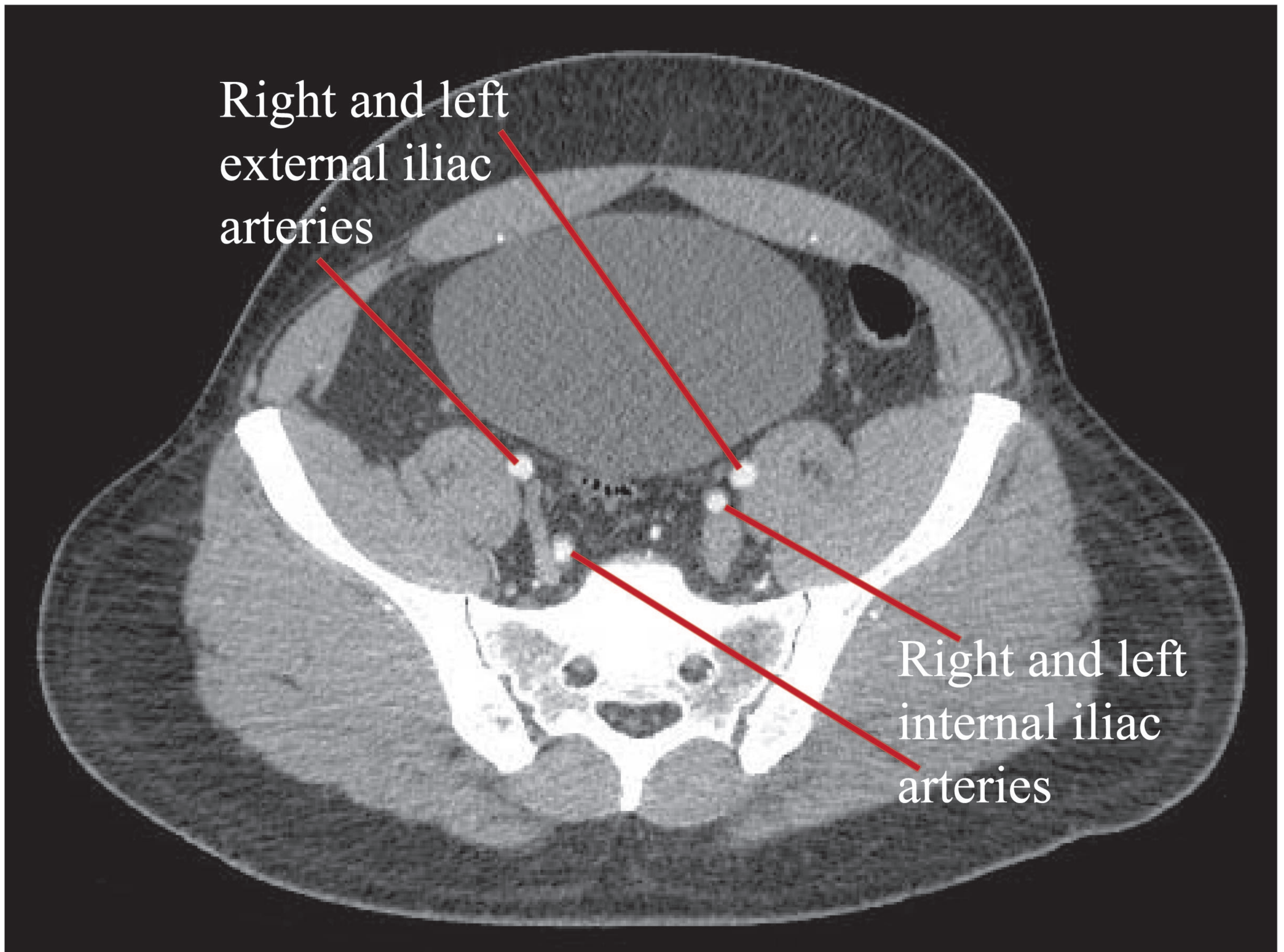


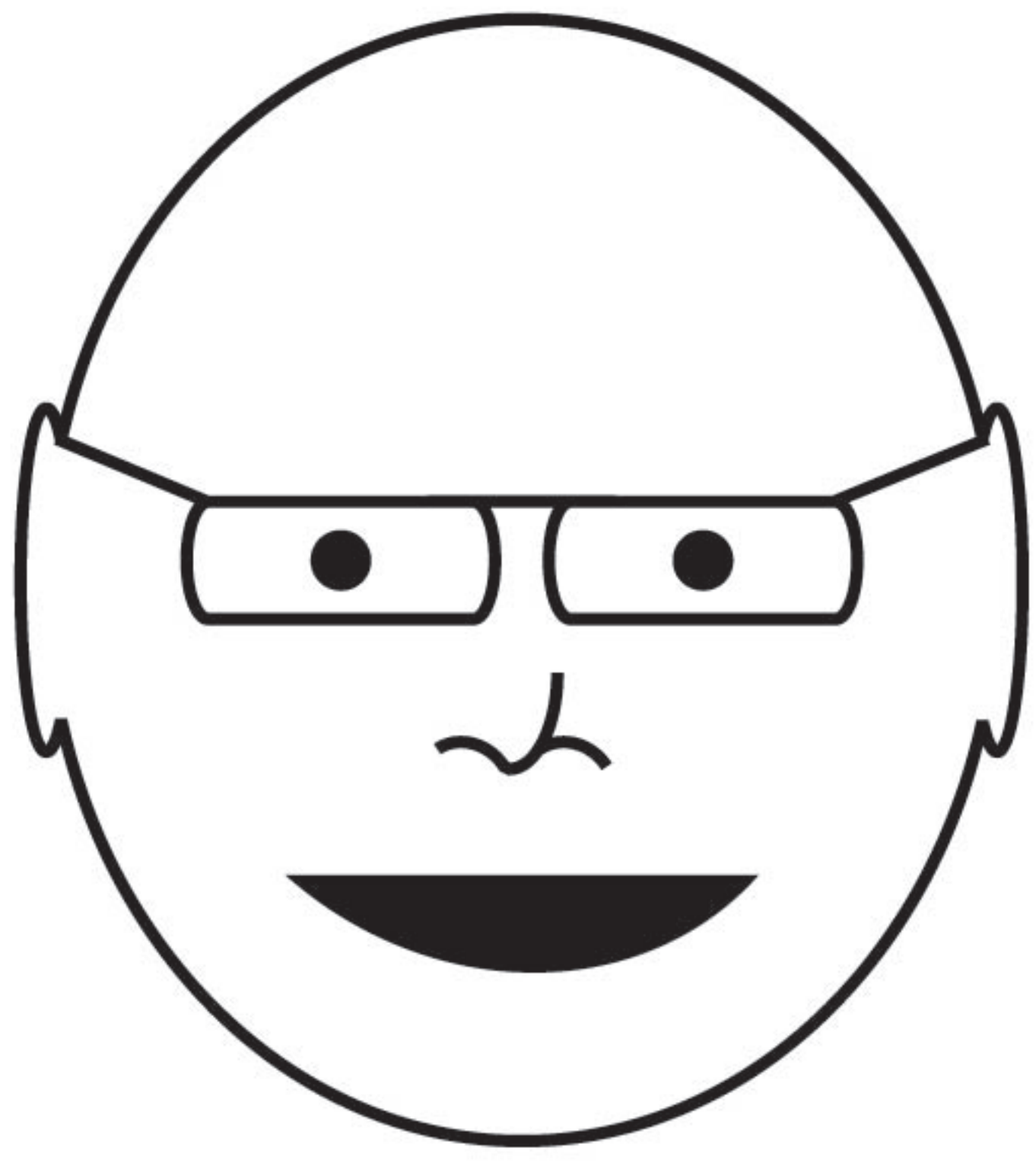
At this point, the external iliacs are anterior to the internal iliac arteries.



Right and left
external iliac
arteries

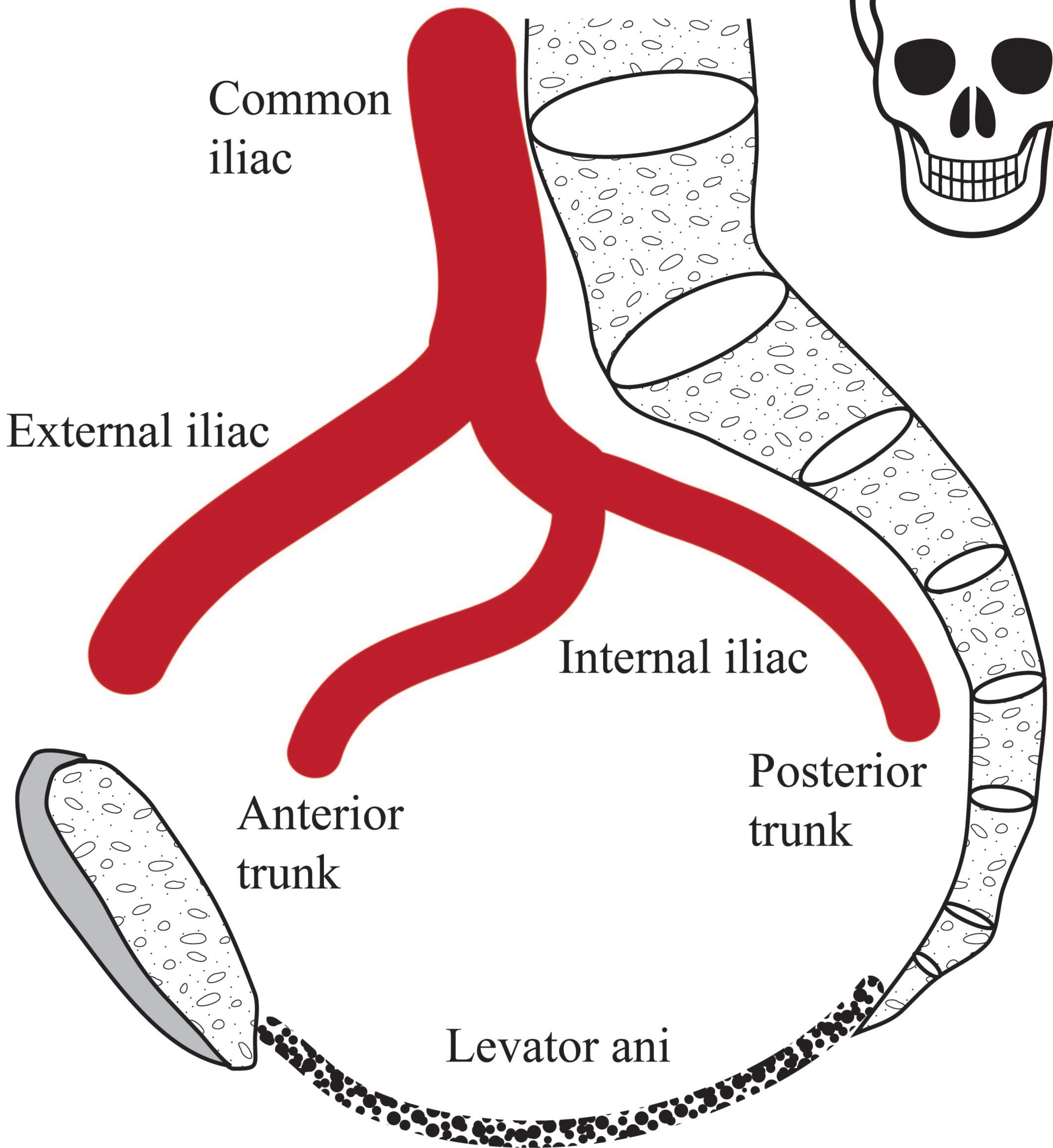
Right and left
internal iliac
arteries

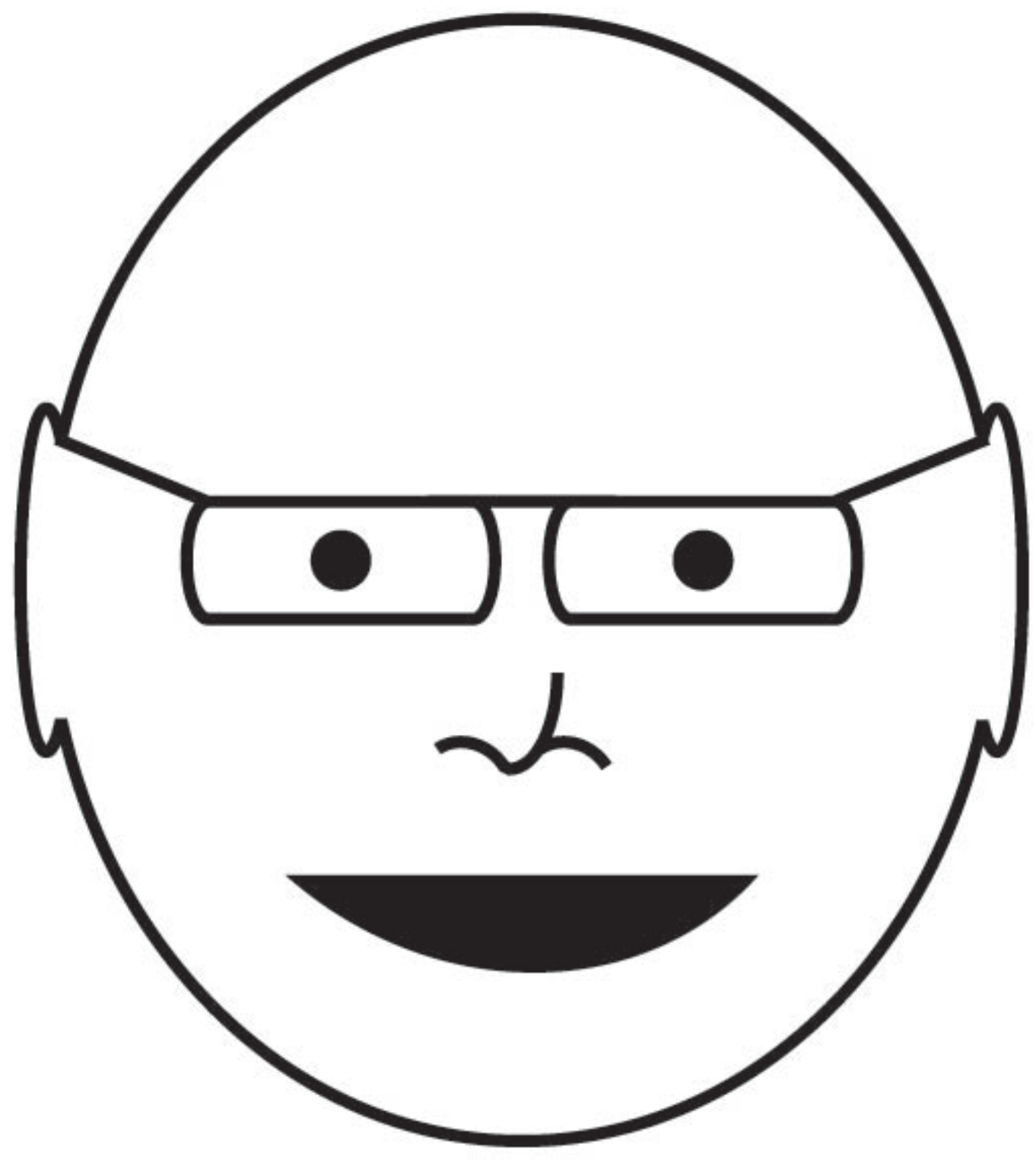




The internal iliac artery divides into anterior and posterior trunks. In general, branches from the anterior trunk supply the pelvic viscera while posterior branches supply the walls of the pelvis.

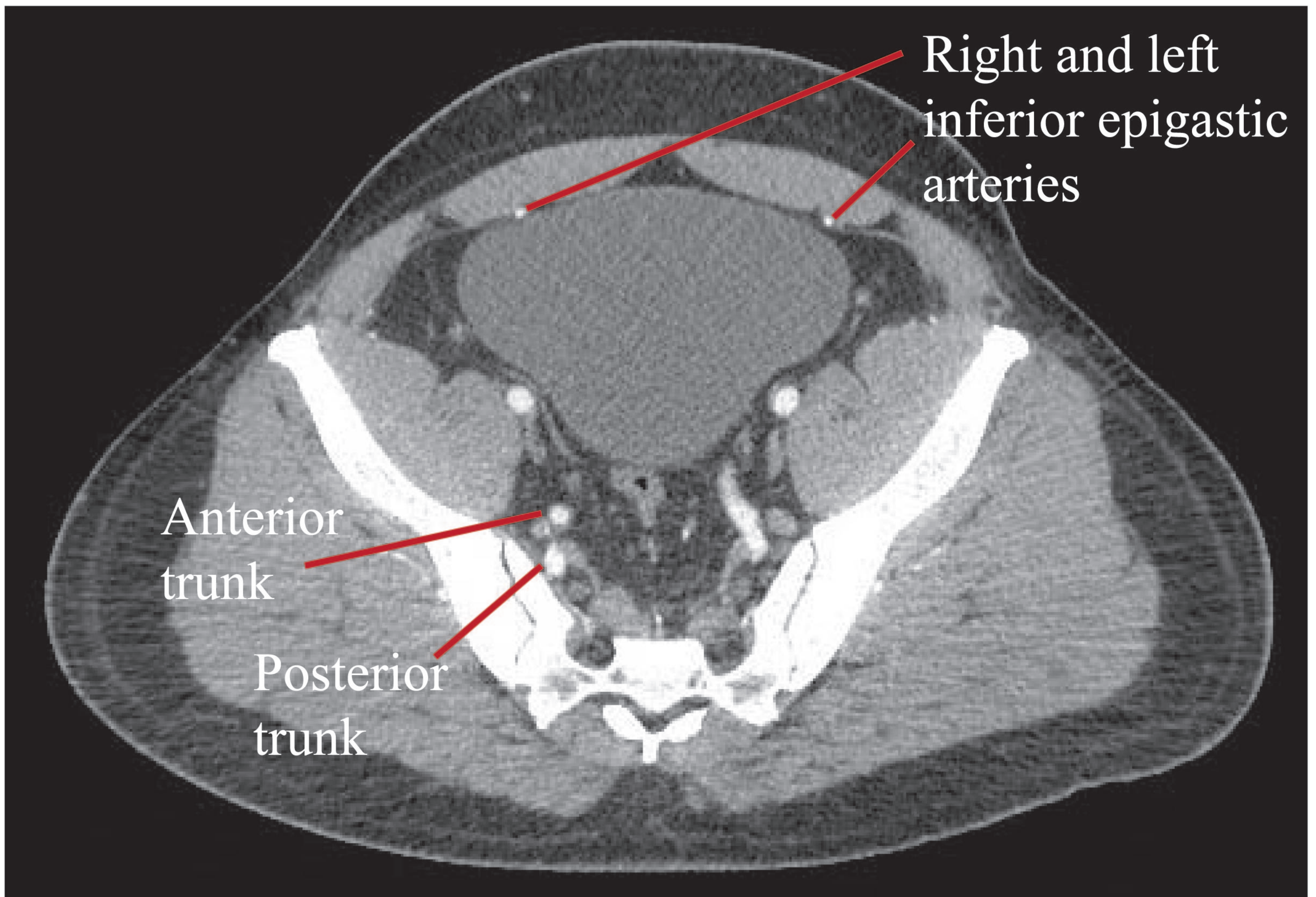
Uh-huh.

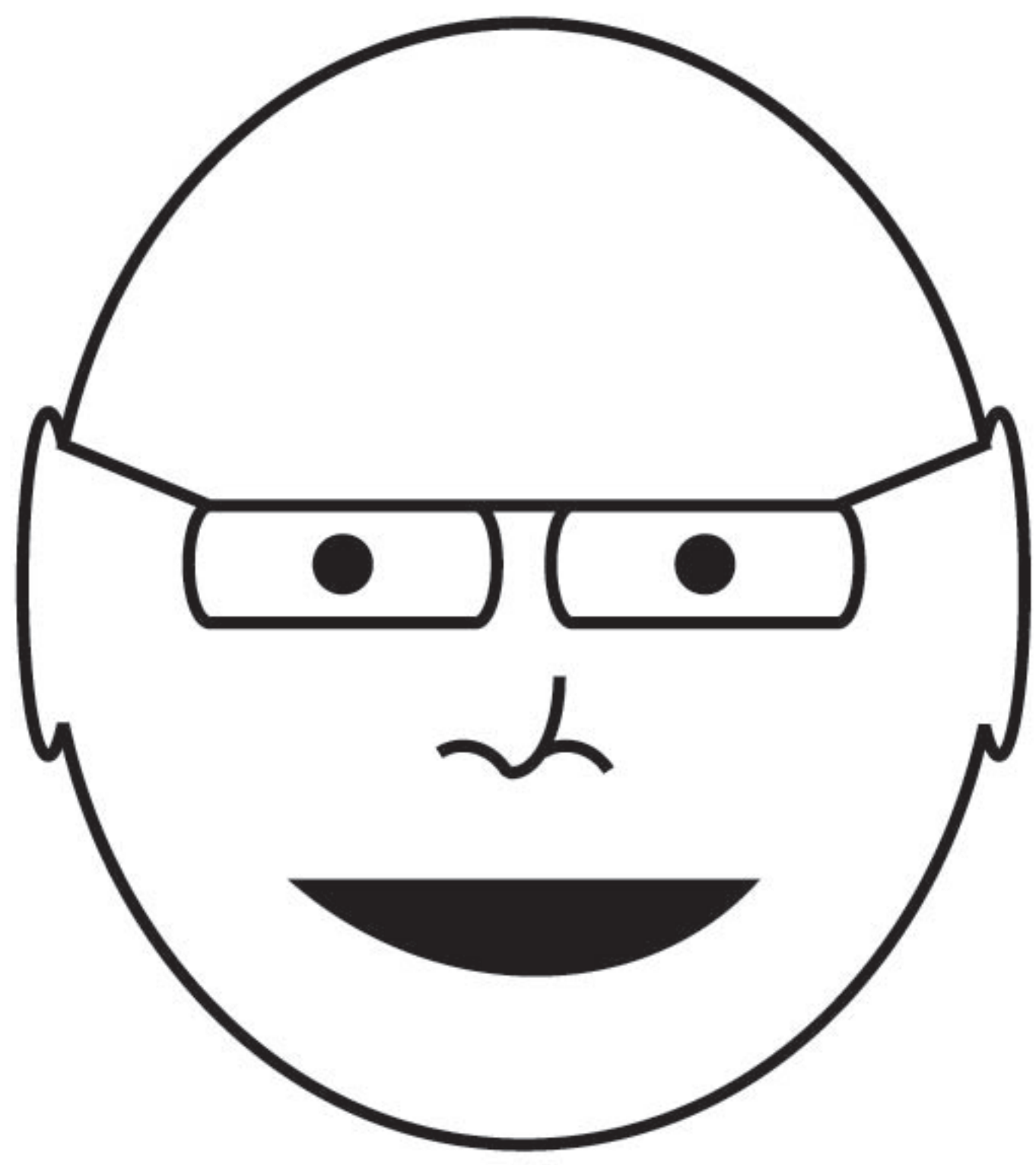




At this point, the right internal iliac artery has divided into anterior and posterior trunks. I labelled the inferior epigastric arteries, they are branches of the external iliac artery that run cephalad deep to the rectus abdominis muscle.

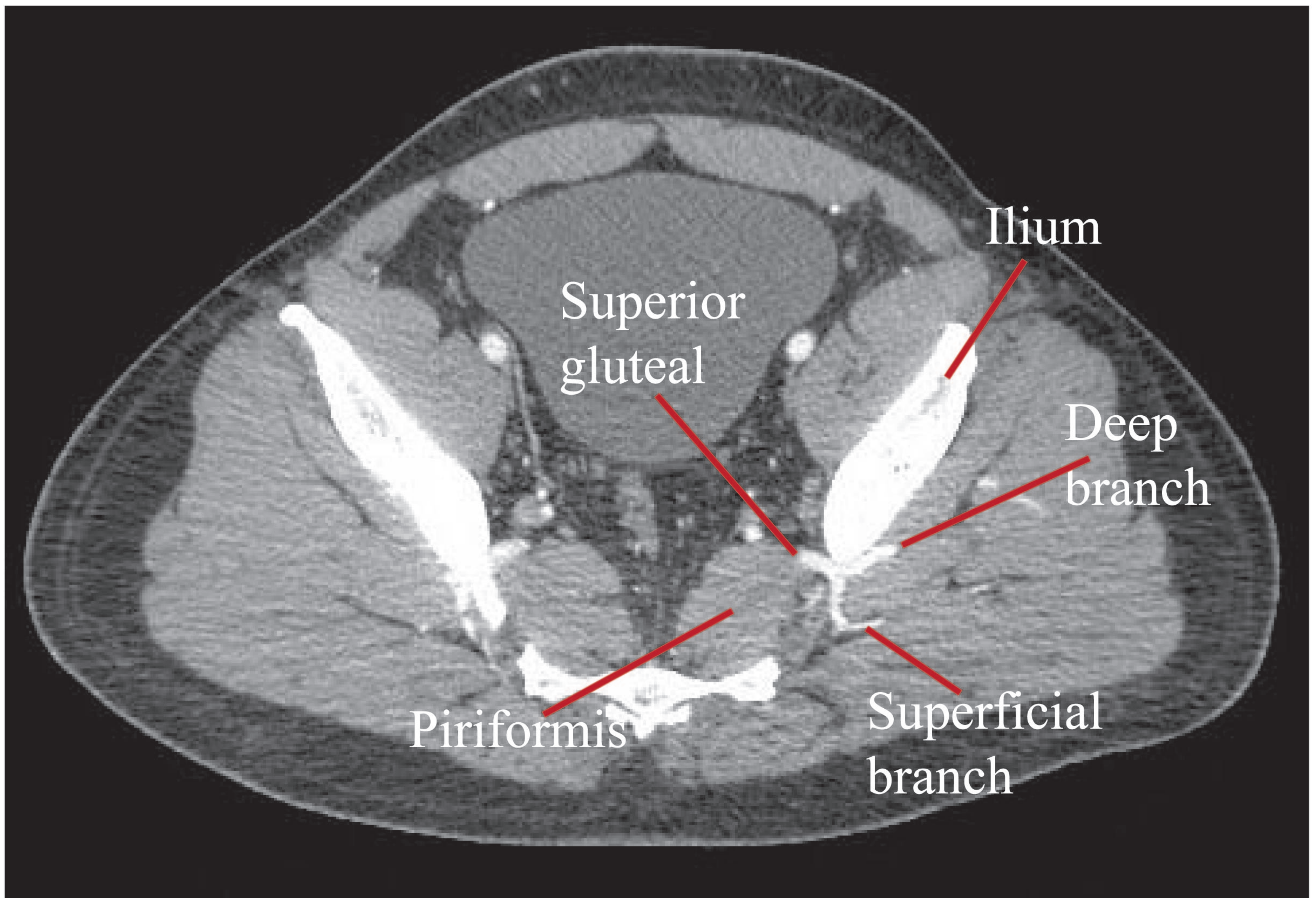
Now, I know that you will be disappointed, but in the coming images, we'll only be able to identify a few branches of the anterior and posterior trunks.



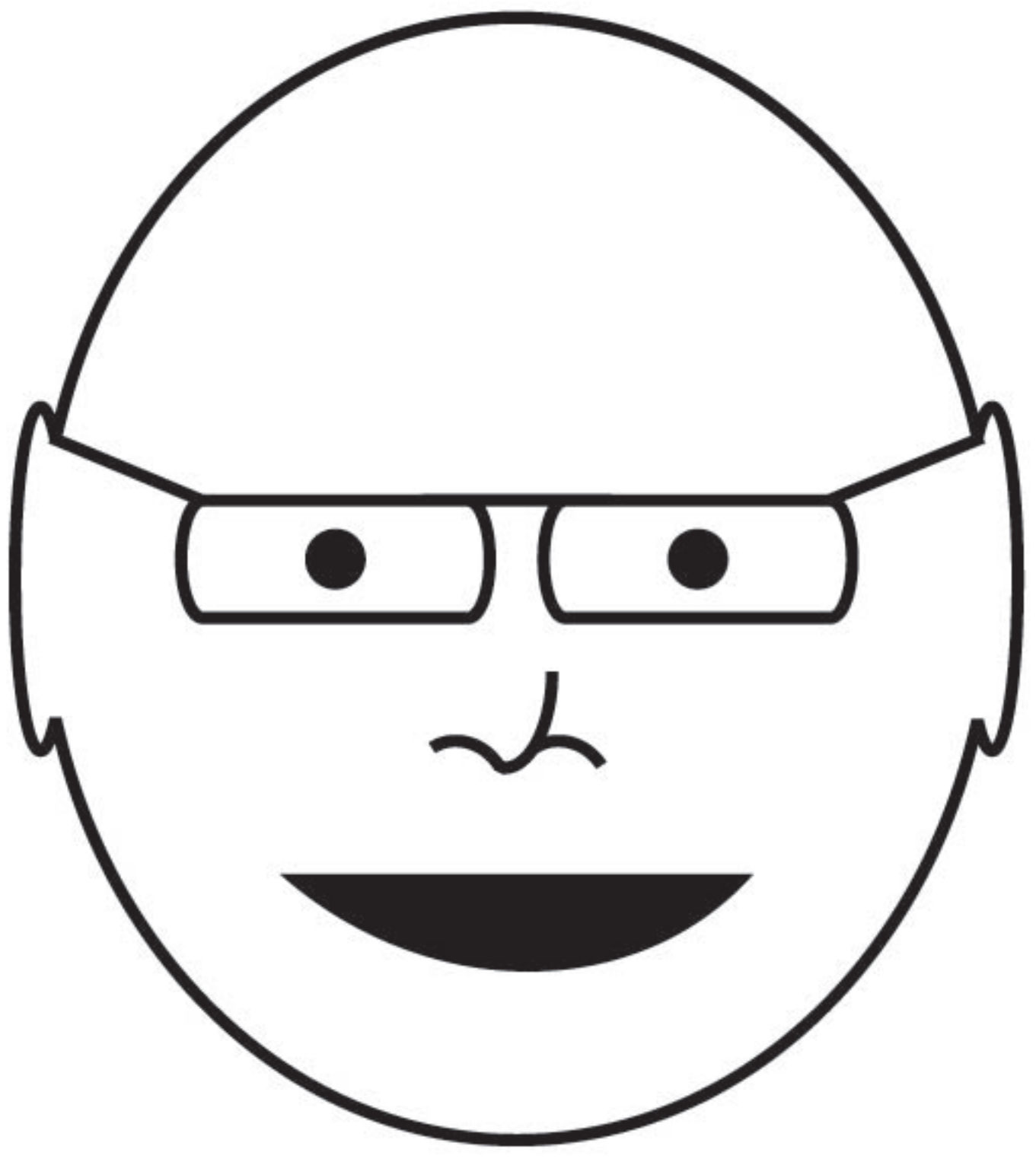


We are going to identify 4 large arteries: the superior and inferior gluteal, the internal pudendal and the obturator artery. We'll show the origin and some of the course of these vessels. Keep in mind that there are some normal variants, so what we see in the images in this comic may not correspond to what you see in your cadaver.

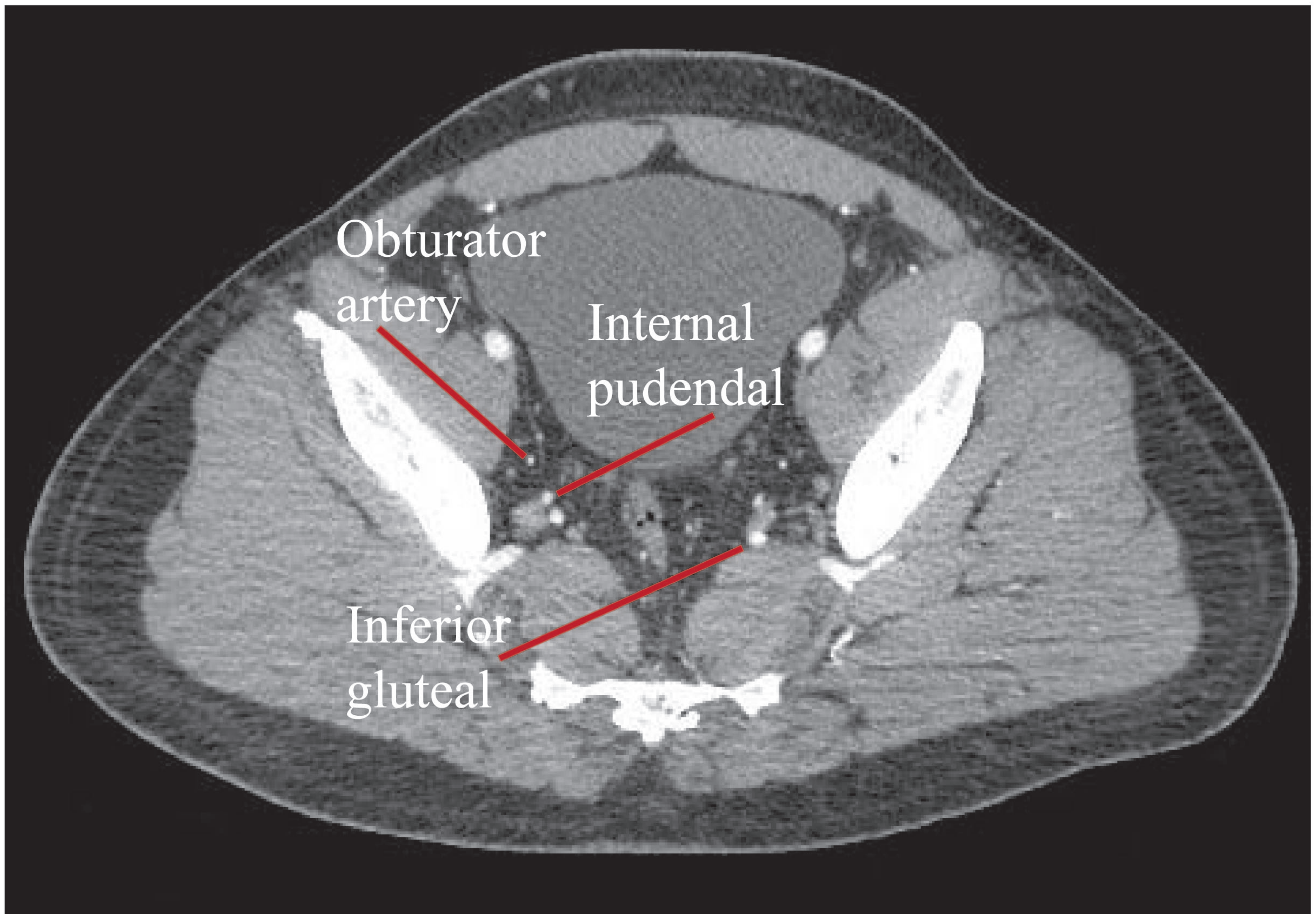
The biggest branch of the posterior trunk is the superior gluteal artery. It passes between the superolateral aspect of the piriformis muscle and the ilium. It has 2 branches: a deep branch that runs between the gluteus minimus and medius and a superficial branch that supplies the gluteus maximus.

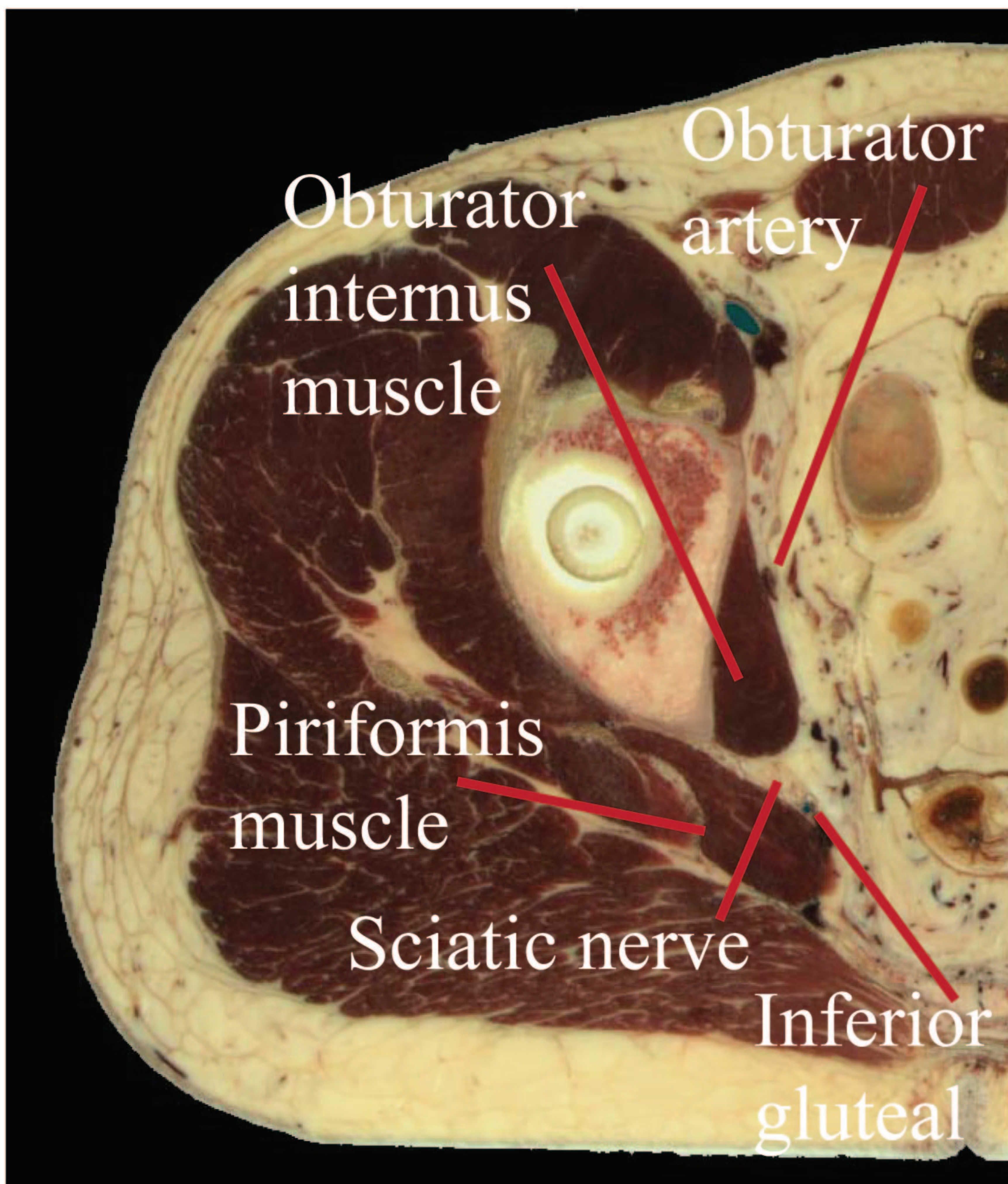


Let's move on to the largest branches of the anterior trunk, shown below. To keep the image from being too cluttered, we only labelled one of each of these paired vessels. We have faith in your ability to recognize the second of the pair. Keep in mind that there is some normal variation: for example, the inferior gluteal may arise from the posterior trunk.

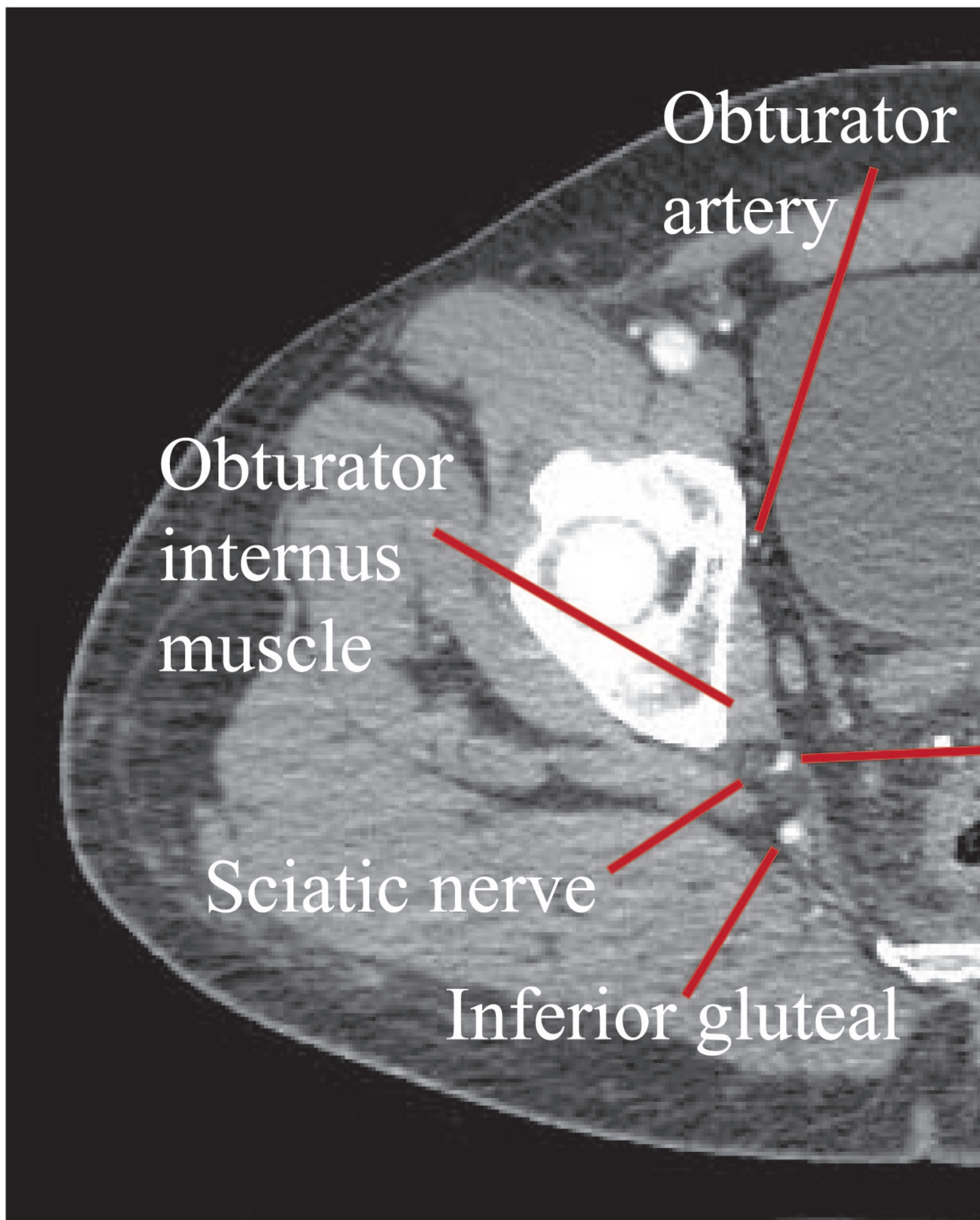


Note the superior gluteal arteries and the piriformis muscles, we'll trust in your ability to recognize those as well!

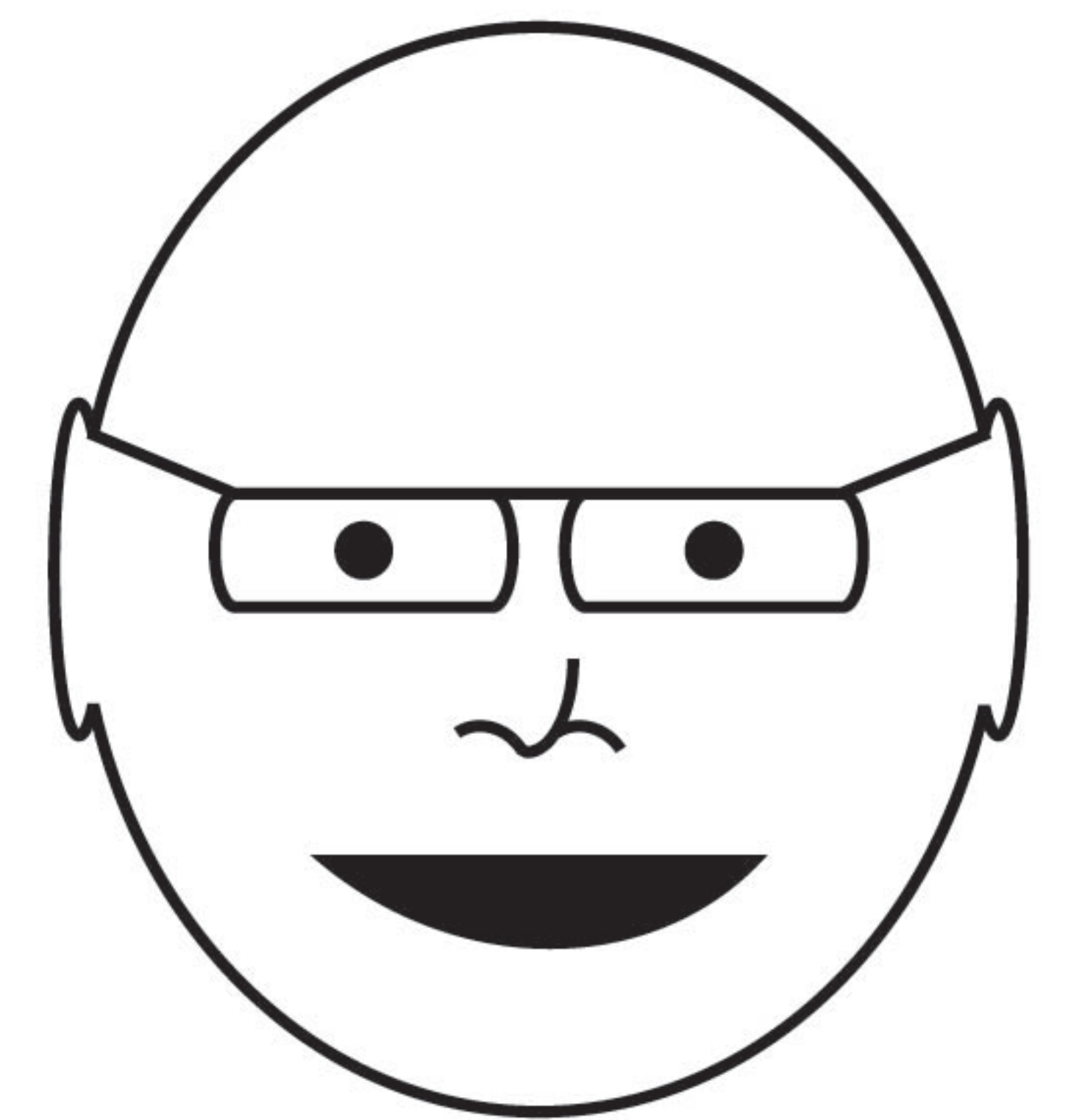




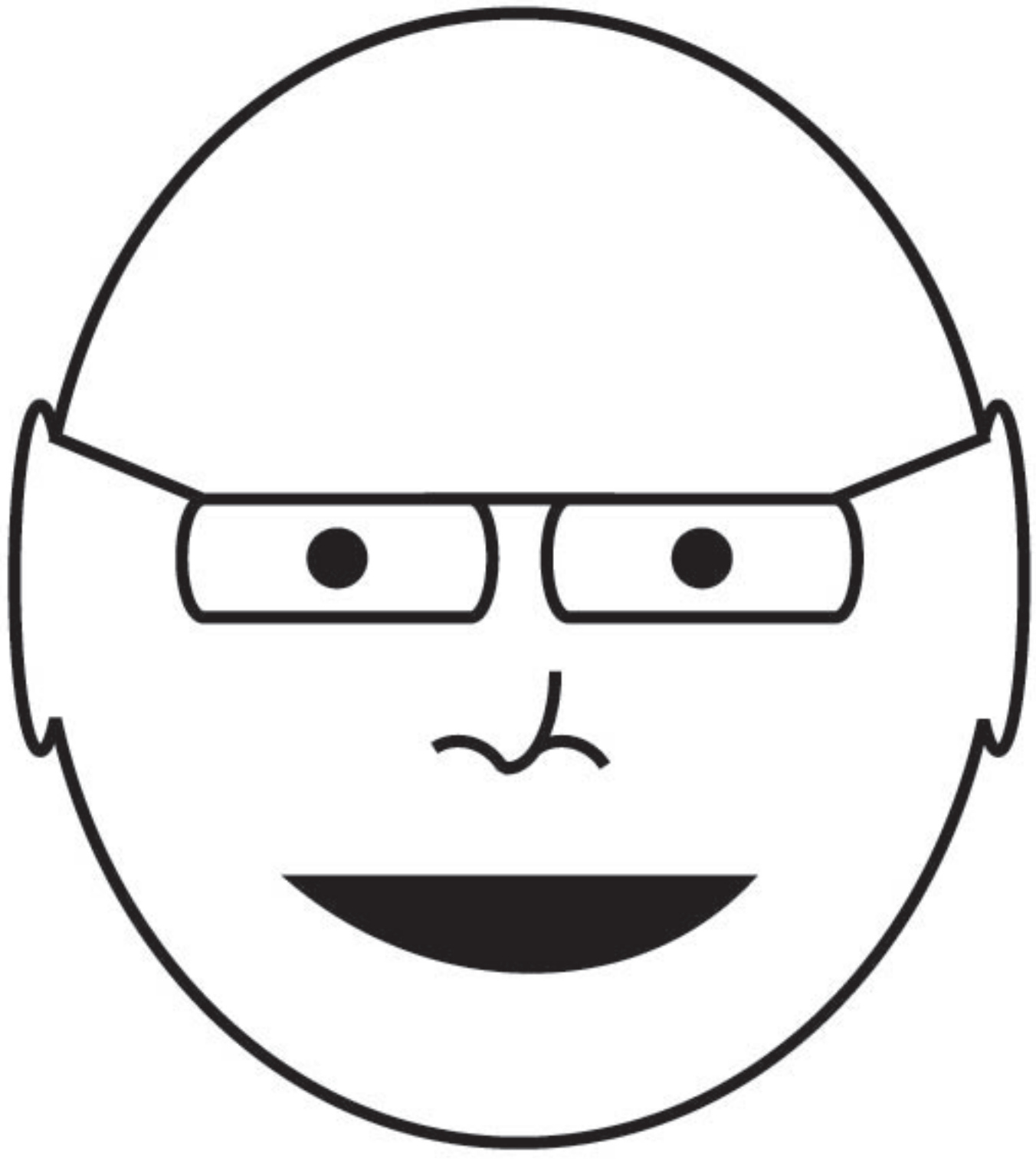
These paired images of the right half of the pelvis from the male visible human project and our CT scan show the more distal branches of the anterior internal iliac. The inferior gluteal artery goes below the piriformis muscle, medial to the sciatic nerve. In fact the sciatic nerve is so big, that the inferior gluteal actually has a branch that supplies the nerve. It will be easier to appreciate these relationships in the lab when we can scroll through the entire data set.



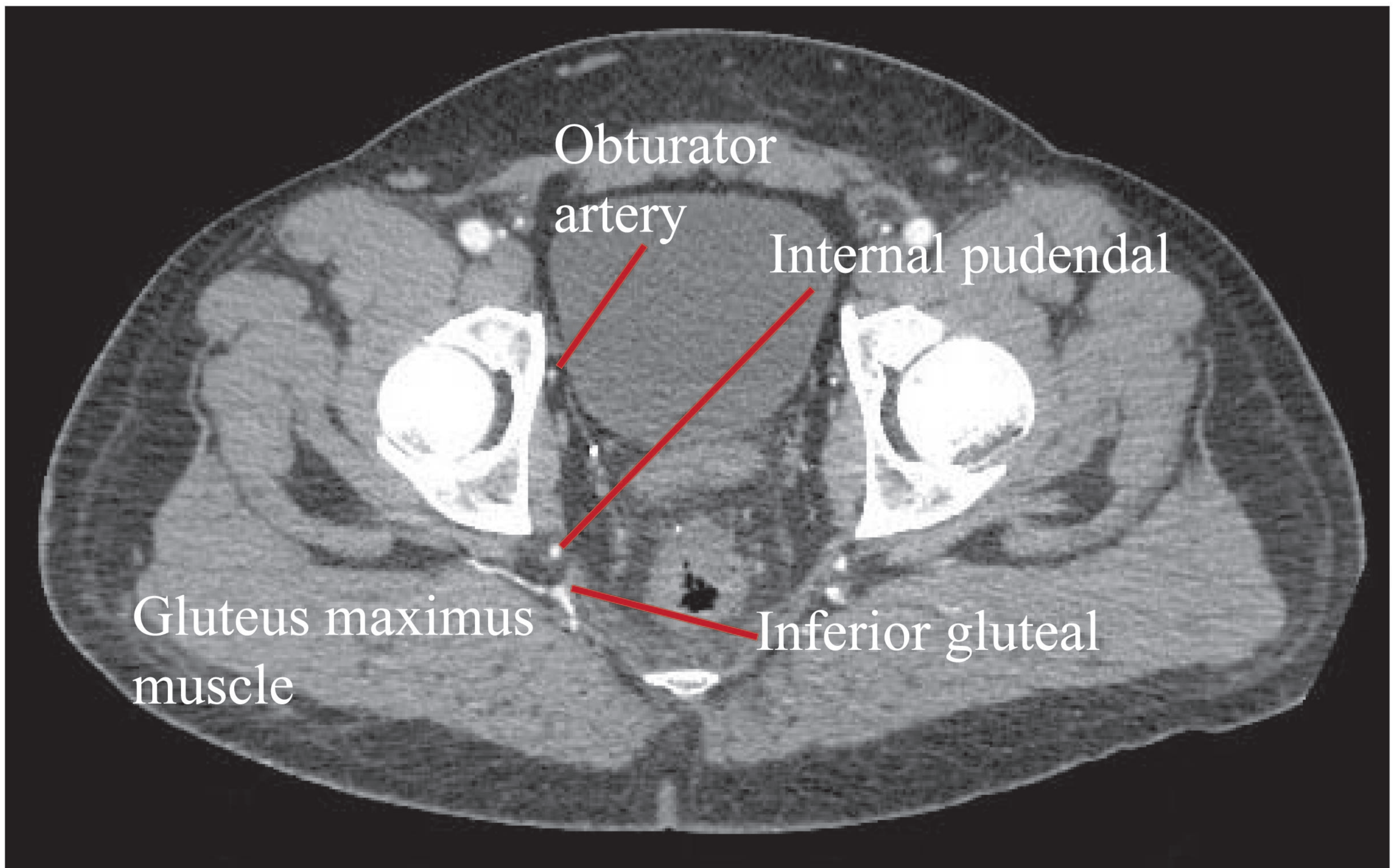
Internal pudendal

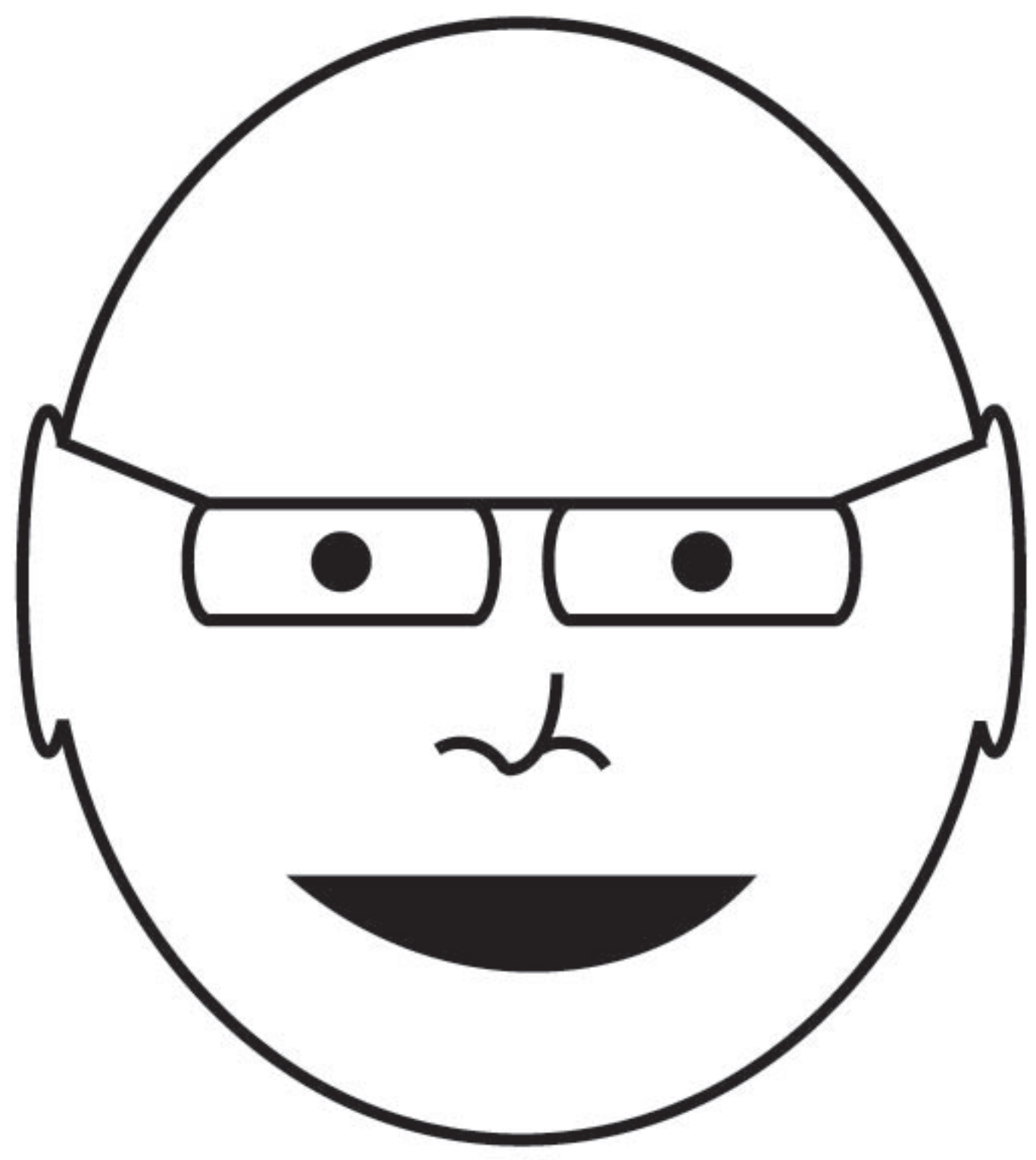


A few slices below the previous images, we can see the inferior gluteal artery dividing to supply the gluteus maximus muscle. Meanwhile, back in the pelvis, the internal pudendal artery is fixin' ta mosey on out of the pelvis through the greater sciatic foramen.



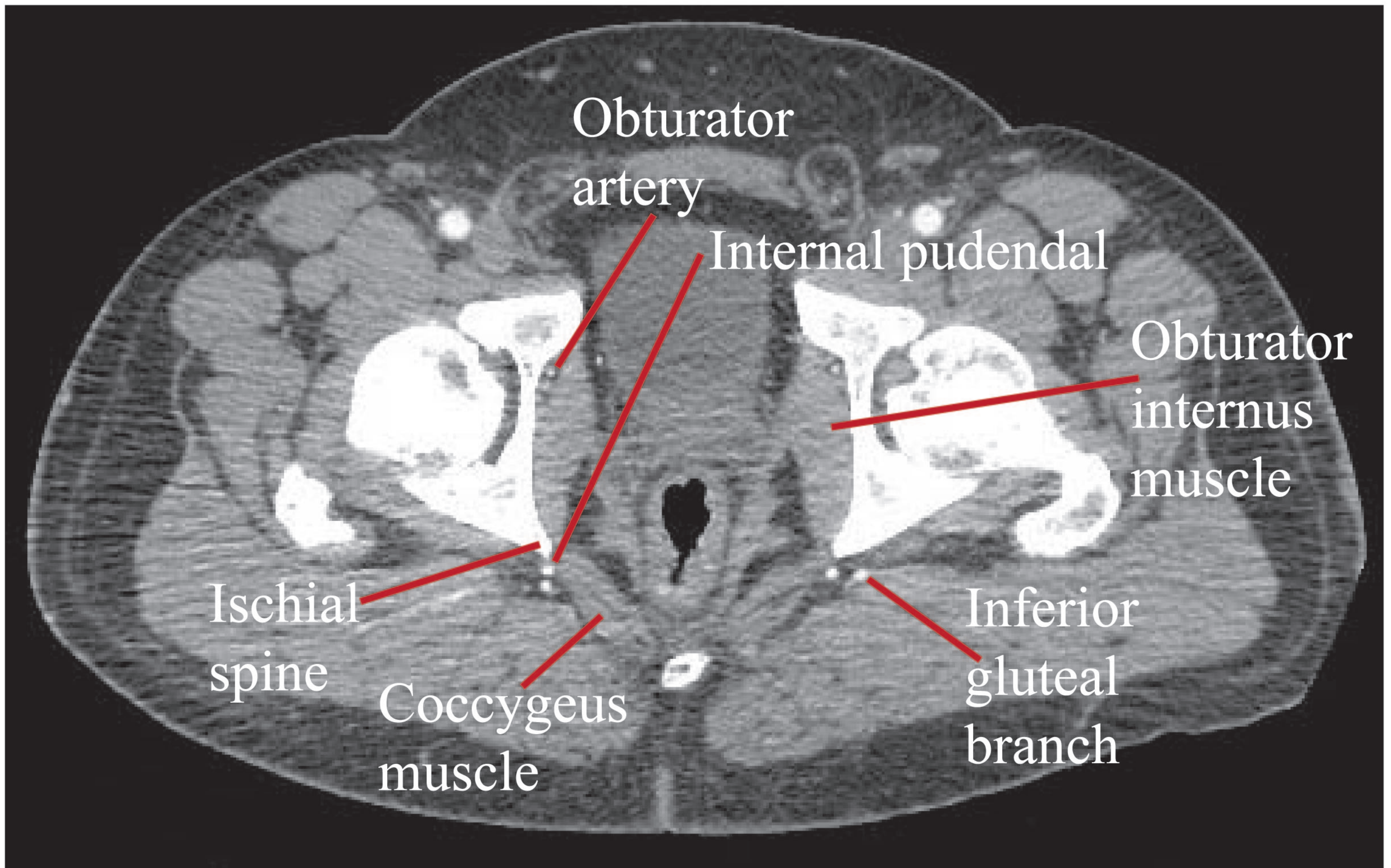
Git along,
"Perfesser".

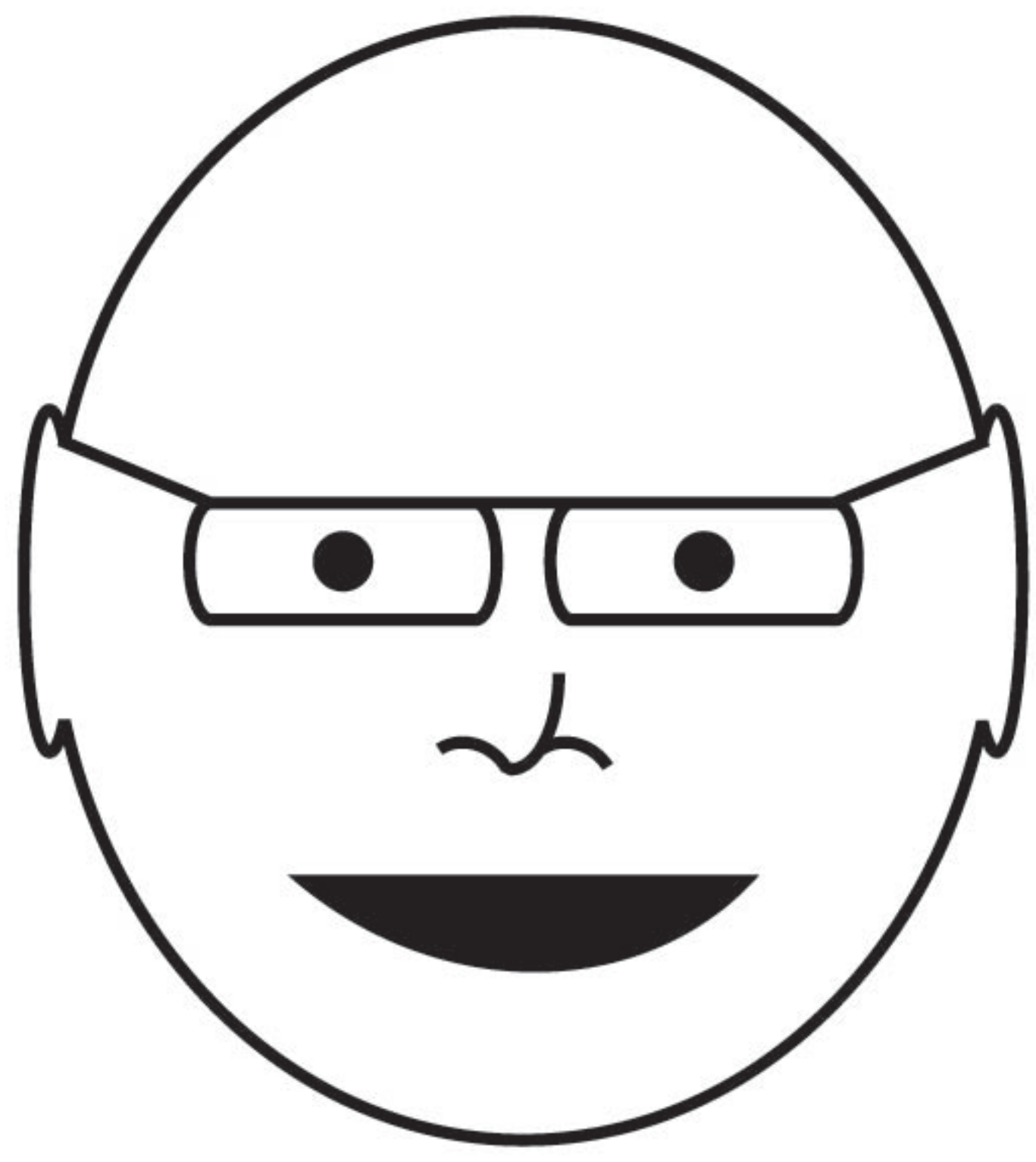




After the internal pudendal has left the pelvis through the greater sciatic foramen, it hooks around the ischial spine behind the coccygeus muscle.

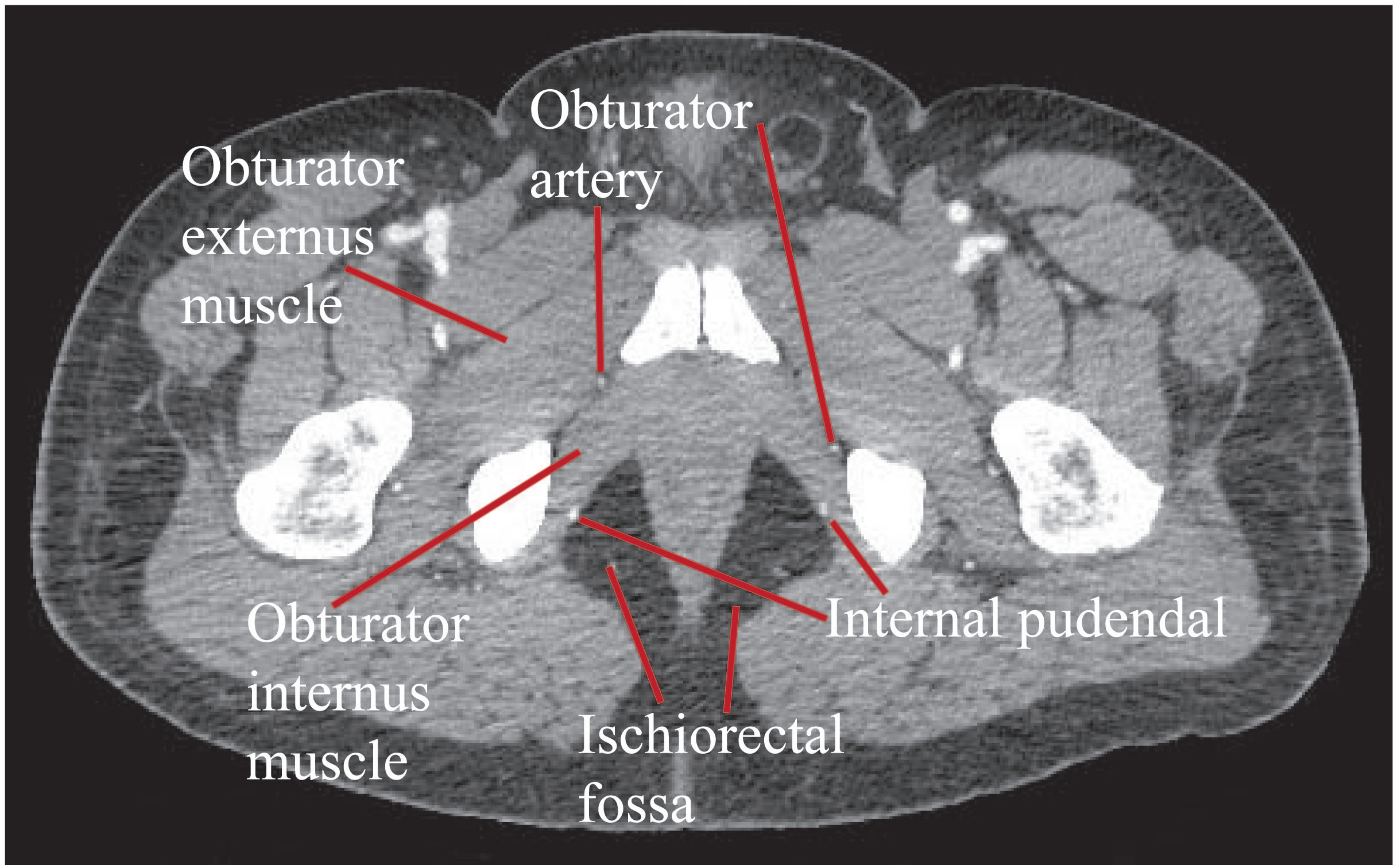
Note the obturator artery just lateral to the anterior part of the obturator internus muscle.

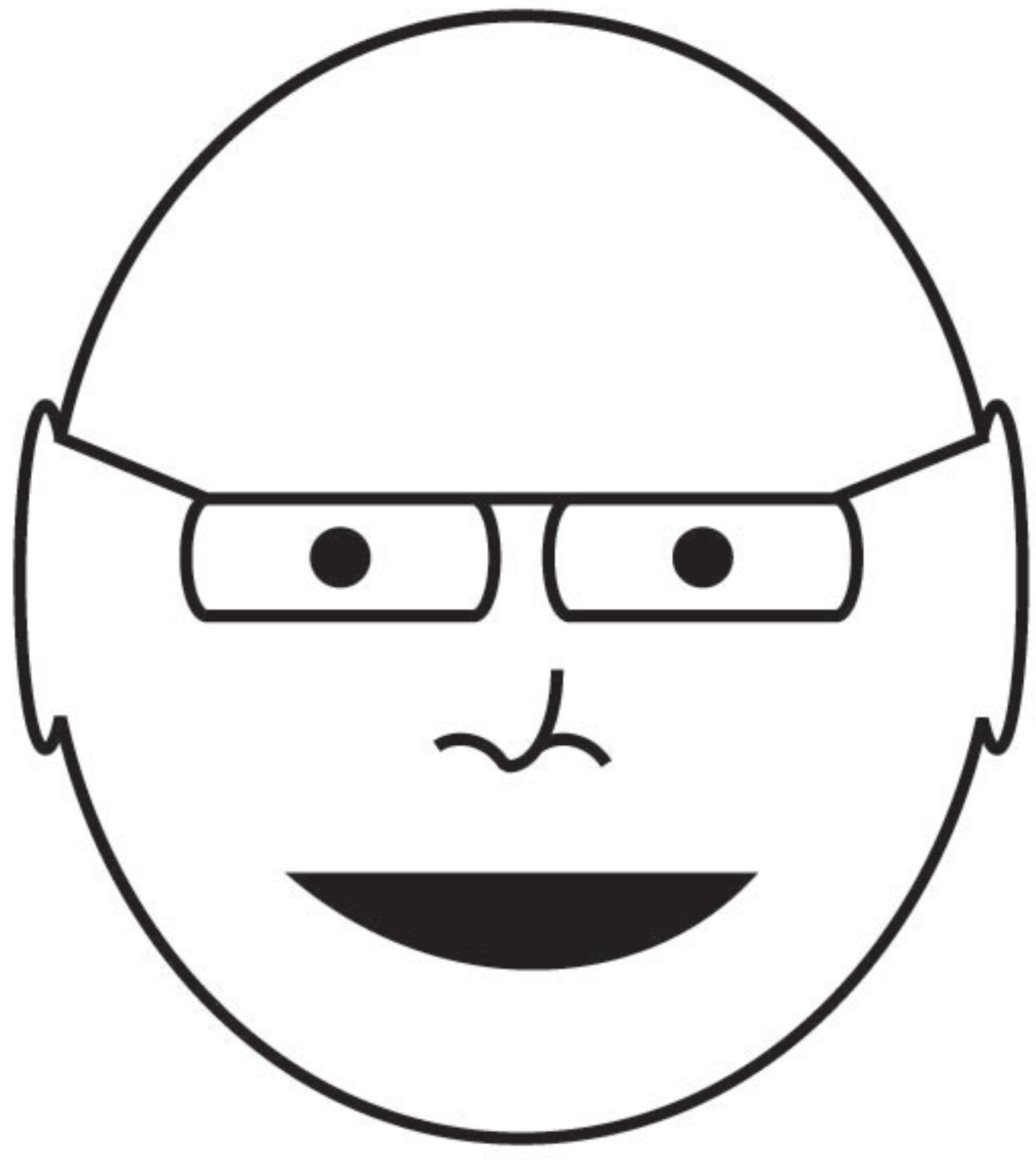




Below the level of the coccygeus muscle, the internal pudendal enters the perineum through the lesser sciatic foramen.

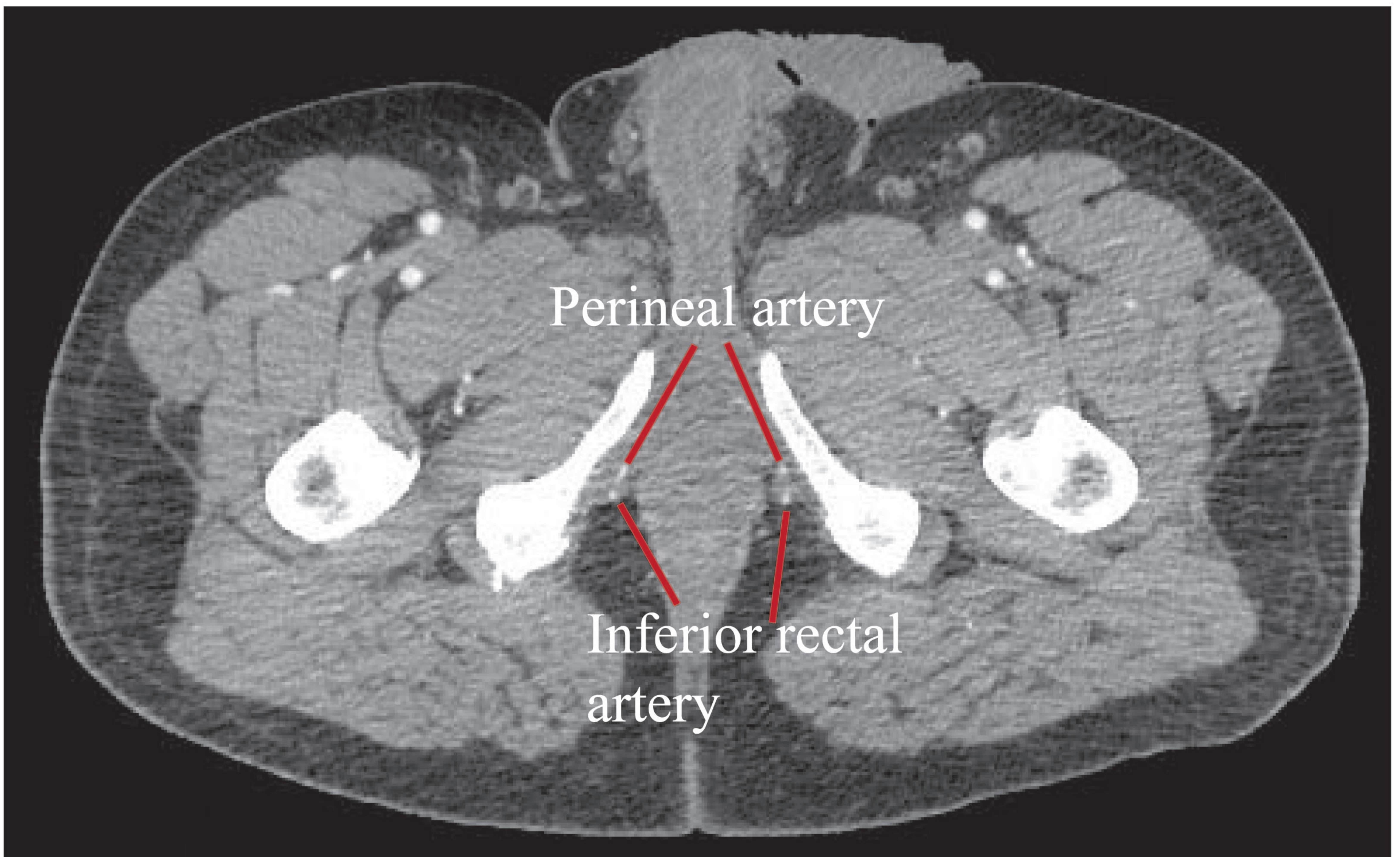
You can see the obturator artery between the internal and external obturator muscles.



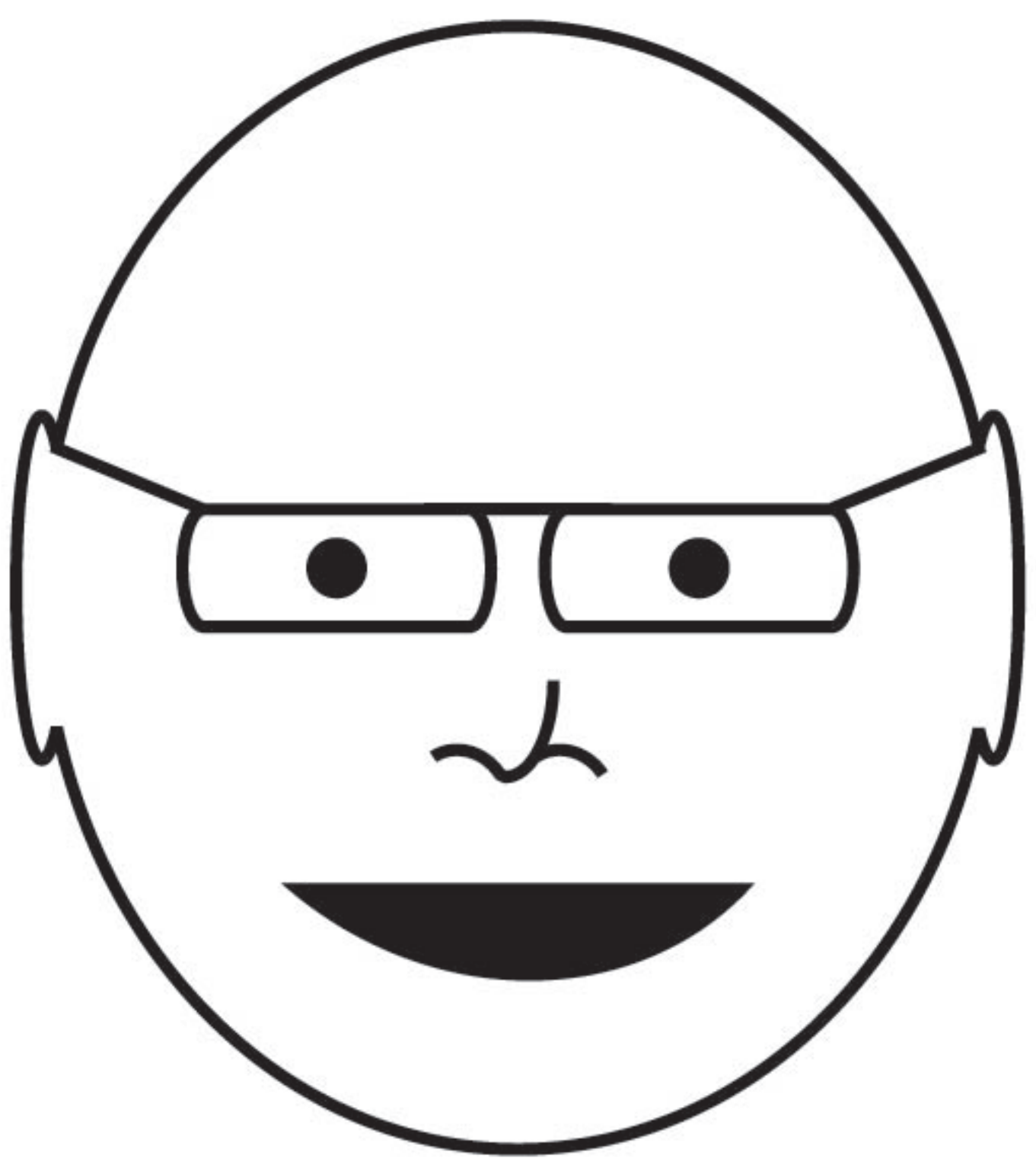


This last image shows two branches of the internal pudendal artery, the inferior rectal and the perineal. We'll look at these in lab as well, they are easier to follow with the complete data set.

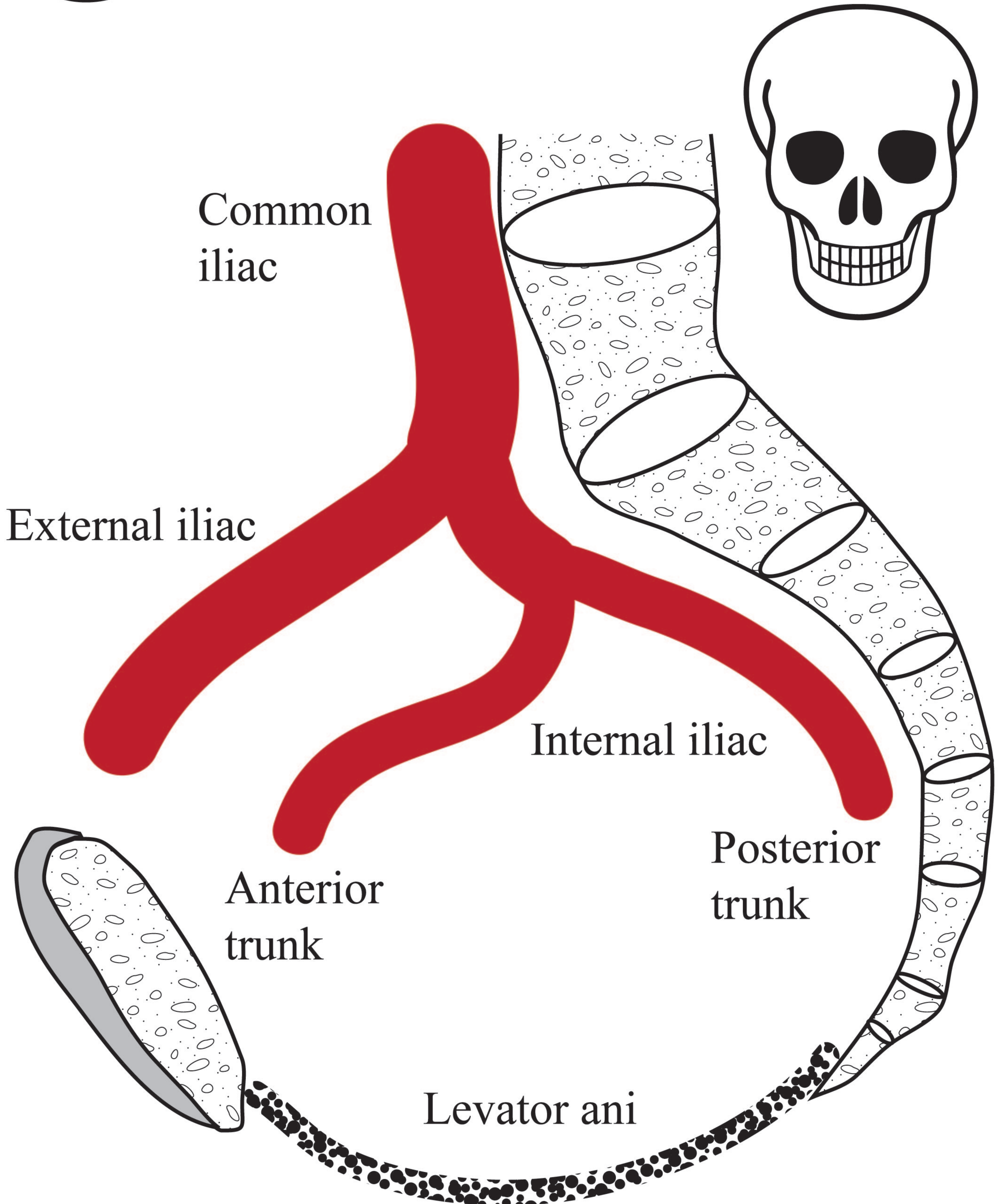
At this point, the vessels become too small for us to recognize, so we will quit here.



That's all for this exciting edition of "Anatomy Comics"!



Make sure that you can draw this picture, it is really easy!



Common
iliac

External iliac

Internal iliac

Anterior
trunk

Posterior
trunk

Levator ani