

- SPEAKER:** So we're going to run through some samples here, and feel free to yell out. So this was a lymph-node pass by yours truly. What do you think? Blood, yup. So actually the fellow did it.
- JEFF:** So red blood cells. This is an example of an inadequate smear. Next?
- SPEAKER:** Here's one I did.
- JEFF:** This is a lymph node, and this is an example of a benign lymph node. If you look at, all the cells in here are about the same size. They're very small. And again, you can compare it to red blood cells, but it's hard to see at this power the red blood cells. But this is what a normal lymph-node smear looks like. There's some clumping in the middle, but that's different from the cohesive sheets that you see with tumor. And we're just trying to give you an example of some of these.
- SPEAKER:** But you will notice, obviously the large quantity of cells. Definitely it's a shift in brain that bigger is not better. In fact, lymph-node work, bigger is frequently worse.
- JEFF:** Yeah, bigger just gives you more blood.
- SPEAKER:** What do you see here, Jeff?
- JEFF:** So again, I think we saw this picture earlier. This is a benign lymph node. You can see the anthracotic. That's the black pigment in the histiocytes, evidence that we're in the node. This is an example of a negative node but is an adequate pass.
- SPEAKER:** Fellow again.
- JEFF:** And again, you can see a few lymphocytes in here. The rest of these are red blood cells. This is what a benign-- or I'm sorry, not a benign, an adequate pass looks like. And it's one of the advantages too, I think, of having a screen in the room where you can both see because then they won't argue with you about what we see.
- SPEAKER:** But is also there's an immediate utility, obviously, to having that as well. As soon as that shows up on the screen, I mean, we're already ready to go take another pass because clearly we screwed up in some capacity and don't have an answer.
- What do you guys think here?
- AUDIENCE:** [INAUDIBLE]
- SPEAKER:** Maybe.
- JEFF:** You guys are better than me.
- SPEAKER:** It's necrosis.
- JEFF:** So yeah, this is almost all necrotic, which I guess everyone that has done these is probably aware of what that looks like. It almost looks like white paste, necrotic material, wouldn't you say--
- SPEAKER:** Yeah.

**JEFF:** --grossly. And this is what it looks microscopically. Most of this material, it just looks like ghosts of cells. They lost their nuclei, and it's a lot of really a lot of debris and inflammatory junk. And so something like this, we would go to a higher power to see what's causing it because it could be infection.

And you do see, especially in the middle here, you see these cells with really large nuclei, and the nuclei are very irregular shaped. They're not nice and around, different sizes. They call it pleomorphism. And the cytoplasm of these really big cells is really dense, so that's consistent with the a squamous cell carcinoma. And necrosis is actually really common with that.

**SPEAKER:** The necrosis thing is actually one of the things where we have a lot of our discussions because frequently I would say it's all necrotic material. There, obviously, we found tumor, but frequently you can't. And so there is a value to that though because one of the things that the cytopathologist can verbalize to you, they can say, look, I see nothing. I don't see any so-called ghost cells of what may have been tumor. I really think this might be infectious. And that gestalt will help you because then I'll start taking a bunch for culture.

If they say look, I'm worried about this. I can't call it anything because it's all dead stuff. But then you've got whatever sized lymph nodes you're going after. That lymph node's got several different regions, so you clearly thought biopsying in a lot of different zones of that lymph node, if you will, to try to find the better spot.

Clearly on ultrasound if it's a node that has sort of multiple echo signals, then clearly whatever you were hitting, whatever color that is on your ultrasound hit something that's a different color, usually less dark, and you might find your answer in there ultimately.

**JEFF:** Yeah, and we just had that case that turned out to be a TB case, which was expected to be tumor.

Oh sorry, so this is another one of just benign lymphoid cells, anthracosis. And this would be considered adequate. This is a much higher power so they look bigger, but the cells, again, they're very discohesive.

And this is one of my favorite slides because at low power, this is extremely cellular. And I think what--

**SPEAKER:** What do you guys think this is? There's a lot of material on the slide. OK, I'm hearing a lot of whispering, so we'll go on.

**JEFF:** All right, so at low power it looks like it's probably tumor just because it's so cellular. It doesn't look like lymphoid cells. They're a little bit more clustering, and also you can see that a lot of these cells have cytoplasm whereas lymphoid cells do not. So it's a very cellular smear.

So we go to a higher power, and this is what we see. These are all bronchial cells, benign bronchial cells. You can see the red cilia on all of these, and you could go to any part of that slide and go to high power and see the same. So it's just an example of sometimes it can fool you. You can have a really cellular smear, and this is benign pickup. So this is actually inadequate because if the target was a lymph node, we're just getting the benign bronchial cells. If it was tumor that we're going after-- I mean a lung mass, then we're just getting bronchial cells.

And I think this is the last one. So again, anybody want to say?

**SPEAKER:** We got [INAUDIBLE].

**JEFF:** So they're forming sheets, cohesive sheets. And go to a higher power, you see there's a lot of polymorphism, different sizes and shapes of the nuclei, especially those two nuclei in the upper left. So this is an example of an adenocarcinoma. And the goal isn't to get everybody to be able to diagnose but at least to see what the pathologist is seeing.

Here's another example of something. There's benign lymphocytes, and in the middle there's this three-dimensional cluster that if we were looking at this in the scope, you could be changing the magnification and see that it's actually forming a ball instead of a flat sheet. And these tend to form round or oval structures. Does anybody know if this is?

**SPEAKER:** Granuloma.

**JEFF:** Granuloma. So this is what a granuloma looks like, and it can fool. Somebody might think that this is tumor, but the cells have benign features, and they form these three-dimensional balls. So if we see something like this, then we definitely want to start thinking about cultures.

And here's another very cellular smear. So going to higher power, so these cells are very pleomorphic, all different sizes and shapes. They are somewhat cohesive. There's a little bit of necrosis in the background, all that grungy stuff. So this is an example of an adenocarcinoma.

Another three-dimensional oval thing, and the cells inside of it-- this is a granuloma. The cells inside have kind of a spindled shape, but it's the three-dimensional quality too. They form these tight clusters. So that would be considered adequate.

And here's the last one. And again, very pleomorphic, lot of necrotic junk in the background, another adenocarcinoma. So it's just to give you a taste of some of the things that we see under the microscope.