

Sawbones 121: The People VS The Spleen

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Intro (Clint McElroy):

Sawbones is a show about medical history, and nothing the hosts say should be taken as medical advice or opinion. It's for fun. Can't you just have fun for an hour and not try to diagnose your mystery boil? We think you've earned it. Just sit back, relax, and enjoy a moment of distraction from that weird growth. You're worth it.

[theme music plays]

Justin:

Previously on Sawbones.

[Law and Order stinger]

Justin:

I feel bad for the spleen. It got a bad rap and then everybody just got rid of it.

Sydnee:

[laughs].

Justin:

Nobody even knows what it's for.

Sydnee:

Well, I mean, I do, but we'll talk about that in another episode.

Justin:

I don't believe you. I mean, I don't believe you that we'll talk about it, but I triple don't believe you that you don't need it for anything. Like it's—

Sydnee:

No, you— No, you need your spleen. You absolutely... Okay.

Justin:

There's no way you need your spleen!

Sydnee:

Okay. Yes, you... Okay.

Justin:

Yeah. Have—

Sydnee:

You absolutely...

Justin:

Do people have their—

Sydnee:

... need your spleen.

Justin:

Do people have their spleens removed?

Sydnee:

Yeah, sometimes.

Justin:

Your Honor, your Honor, the defense rests.

Sydnee:

But they're—

[Law and Order stinger]

Justin:

Hello everybody, I'm Justin McElroy.

Sydnee:

And I'm Sydnee McElroy.

Justin:

And it's on, the people versus the spleen. The day you've been waiting for for two weeks is finally here.

[Law and Order stinger]

Sydnee:

I don't understand—

Justin:

In this corner.

Sydnee:

Okay. [laughs].

Justin:

All rational people...

Sydnee:

No.

Justin:

... who know that the spleen is a big useless lump of body cheese.

Sydnee:

Okay.

Justin:

In that corner...

Sydnee:

[laughs]. The spleen—

Justin:

... Sydnee, by herself.

Sydnee:

The spleen isn't made of cheese. Can we start with that?

Justin:

[laughs].

Sydnee:

The spleen is not made of cheese.

Justin:

A useless lump of body cheese.

Sydnee:

No. Oh. Oh.

Justin:

In this corner, all rational people. In that corner, it's just Sydnee, out on a limb. 12 angry men, can she win them over?

Sydnee:

So it, as you can tell, Justin has been watching too much of the Grinder.
[laughs].

Justin:

Uh, and 12 Angry Men, simultaneously.

Sydnee:

And 12 Angry Men. He's just...

Justin:

On a, I'm having a second screen—

Sydnee:

... watching it over and over again.

Justin:

Second screen experience with 12 Angry Men. That's on my iPhone.

Sydnee:

He's really just watching that Amy Schumer...

Justin:

Yeah.

Sydnee:

... episode about 12 Angry Men [laughing].

Justin:

Yeah. Uh, so, Sydnee, uh, nobody needs their spleen.

Sydnee:

That's not true. Can that be the whole episode? You're wrong.

Justin:

Hmm, that wouldn't...

Sydnee:

You need your spleen.

Justin:

We've gotta do—

Sydnee:

You can live without it, but it's better if you have it.

Justin:

We have to do the ads too, so that can't be the whole thing.

Sydnee:

Oh, okay. Well, that's fair. Uh, so Justin doesn't appear to know anything about the spleen.

Justin:

That's, uh... Okay, this is my point, and I'm going to state my case first, 'cause I think my case'll be shorter. Do— And I said it in the last episode, and I'll repeat it here. Do people get their spleens removed?

Sydnee:

Yes.

Justin:

Do they get them replaced?

Sydnee:

No.

Justin:

You don't need your spleen. Thank you.

Sydnee:

No, but just because you can live without something doesn't mean that it doesn't provide any function, and that, like, there aren't consequences to not having it.

Justin:

So it's like an extra part in your body.

Sydnee:

No, it is not an extra part.

Justin:

Like, there are lots of those.

Sydnee:

No, we don't have a lot of extra parts in our body.

Justin:

No kidding, Sydnee.

Sydnee:

There are just parts that we can live without.

Justin:

That's what I keep saying. Okay, I'm— I need you to... You're, uh, you're letting me, like, dom—

Sydnee:

Okay.

Justin:

I'm running away with this thing right now.

Sydnee:

Okay.

Justin:

The jurors are standing up. As jurors are wont to do when they're bored, they're standing up and leaving, and they're saying, "My mind's made up. I'm going to Arby's."

Sydnee:

Okay, I don't think jurors are allowed to do that. [laughs]. But I don't know, I've never been on a jury.

Justin:

Help out, America. Please let me on a jury.

Sydnee:

That's, hey, hey, that's why I'm calling out to you, US, uh, Judicial Branch. Do they get to pick jurors? The Judicial Branch of the government...

Justin:

[crosstalk]

Sydnee:

... they have to send me a letter?

Justin:

You mean... Okay, the Justice Department?

Sydnee:

[laughs]. The Justice Department.

Justin:

You mean?

Sydnee:

Hey, send me a letter, I'm waiting to be a juror. I just thought I would get...

Justin:

This, folks, if you've never seen—

Sydnee:

I would use our podcast as a forum [laughing].

Justin:

If you've never seen somebody who doesn't have a good argument to make, this is what we call stalling.

Sydnee:

Okay.

Justin:

Sydnee is stalling because she knows that I have dominated.

Sydnee:

I'm gonna... No, I'm gonna tell you about the spleen now. Um, but I think in order to understand why, yes, the spleen is a necessary organ, we need a little bit of history about the spleen, right? Because I think that you're not alone...

Justin:

That's all the spleen is, is history. It's in everybody's rear view.

Sydnee:

No. No, there are, there are lots of people I think who really don't know how the— What the spleen does. Like I remember, like, the spleen was always kind of an organ of ridicule and humor, to my mind, like before I understood what it did. Like I remember people, like, would joke about the spleen, like if

you didn't know anything else about, like, an organ, like throw a spleen out there and it sounds funny, like spleeny weeny.

Justin:

Mm-hmm.

Sydnee:

I remember that, I think that was a thing from Invader Zim, spleeny weeny.

Justin:

I don't know, I never watched that.

Sydnee:

People used to say that a lot. Everybody said that. You don't remember that? Everybody said that.

Justin:

Yeah, I remember what everybody was saying that, it was crazy.

Sydnee:

Everybody was saying that. But, um, but for a long time, since ancient times, classical times, people have not known what the spleen was for...

Justin:

Mm-hmm.

Sydnee:

... much like Justin, so you're in good company.

Justin:

Excellent.

Sydnee:

Uh, thank you, Lance, for also suggesting this topic, for not knowing what the spleen is for and recommending that we educate you.

Justin:

Yeah, we're happy to educate you, Lance. There's not much to say, the spleen...

Sydnee:

Well, not just you.

Justin:

... is useless.

Sydnee:

But everybody. Uh, the spleen is an organ of mystery. It's an international organ of mystery.

Justin:

Like Austin Powers, the spleen.

Sydnee:

[laughs]. Uh, since...

Justin:

Webster's dictionary defines mystery as the spleen.

Sydnee:

Austin Powers and the spleen [laughing].

Justin:

Those are the two things that I must do this. Sydnee, you have not made a good point about the spleen yet. We're, uh, four minutes in, it's still useless.

Sydnee:

Now, in the humoral system of medicine...

Justin:

Yes.

Sydnee:

And do you remember what that is?

Justin:

Yeah, the four humors, they were trying to keep 'em balanced, like bile and phlegm and...

Sydnee:

Right.

Justin:

... black...

Sydnee:

Bile.

Justin:

Bile. And, uh, goopy...

Sydnee:

Blood.

Justin:

Blood.

Sydnee:

Nope, nope, nope. Yellow bile, black bile...

Justin:

Blood.

Sydnee:

... blood and phlegm.

Justin:

Got it.

Sydnee:

Close.

Justin:

That was pretty good.

Sydnee:

So in the humoral system of medicine, which believed, as Justin said, that these four humors had to be kept in balance at all times to maintain perfect health, and the way that—

The reason this was important is that you kept them in balance by giving people various medicines to make them, like, puke or poop or pee or bleed or whatever. Uh, the spleen was the organ that held the black bile, so it was, like, the container for it.

Uh, Hippocrates wrote about it, um, specifically the consequences of an under-functioning spleen, so if your spleen didn't work well enough, then it couldn't hold all that black bile, um, and the way that it got it was, like, it kind of removed it from the body, from the blood, and stored it there.

So if the spleen was either having trouble, like, capturing the black bile, or if it wasn't able to store it well, then you could see that in a person because they would be prone to bouts of melancholy or maybe temper.

Justin:

Got it.

Sydnee:

Hence the term, venting one's spleen.

Justin:

Oh, okay. Well, that makes sense now.

Sydnee:

Have you— Are you familiar with that?

Justin:

I have heard that, yeah.

Sydnee:

So it means, like, you get really angry and it's because your spleen is not containing all of the black bile well, and so it's spilling out, it's venting, and then you are...

Justin:

Perfect.

Sydnee:

... angry. Um, and that was in general, that was what it, you, like, the spleen was thought to basically do, like, black bile was kind of a negative humor. You needed some of it, um, it actually was thought to strengthen your bones, but it was, uh, also kind of a negative thing, and you so wanted it, you know, kept under wraps.

Um, actually, one of the ways they could tell if your spleen was functioning properly was if you were able to laugh.

Justin:

How do you mean?

Sydnee:

If you are able to laugh, then your black bile is well contained, and therefore your spleen is functioning.

Justin:

Mm-hmm.

Sydnee:

If you can't laugh, then you may have too much black bile, you're melancholy, your spleen isn't functioning well.

Justin:

Okay.

Sydnee:

So basically, what I'm saying is if you don't like our podcast, it's probably because your spleen isn't working.

Justin:

You've probably got a malfunctioning spleen right now.

Sydnee:

Yeah. So essentially, the spleen was responsible for keeping you in good spirits.

Justin:

Good spirits.

Sydnee:

Right.

Justin:

Good cheer.

Sydnee:

Um—

Justin:

Santa had a huge spleen.

Sydnee:

And it did that, like I said, it stored the black bile because it was thought to, like, draw all the watery parts out of food in the stomach. There was this thought that it was connected to the stomach, so it would like suck the watery parts out and store some of it, and then you would eventually, they didn't really know how, but some of it would get excreted from your body, like, you'd poop it out. But they really didn't know any of those connections, it was all just kind of theoretical. On a side note, black bile, I wanted to bring this up, black bile is a really interesting concept.

Justin:

Uh, why is that?

Sydnee:

Okay, so there are four humors. Well, there aren't, but we thought there were.

Justin:

Right.

Sydnee:

Uh, and you probably know what blood is.

Justin:

Familiar, yes.

Sydnee:

Yeah. You probably know what phlegm is?

Justin:

Yep, huck a loogie. Yep.

Sydnee:

And you may know what yellow bile is.

Justin:

That's like what's in, what you puke up?

Sydnee:

Uh...

Justin:

Like it's in yellow puke.

Sydnee:

Okay, like, it's made by our liver.

Justin:

Yeah.

Sydnee:

Like, there actually is, like, a yellowish fluid that exists in the body that, I mean, like, there's bilirubin and there's, uh, and people would be jaundiced, so, like, those are three things that you could easily see coming out of a human body, or if you cut open the human body, like, you could find them.

Justin:

Yeah, like, but black bile is, like, we don't see that, where are they getting that?

Sydnee:

Right, so like what is it? And that's an interesting question, like why did it— Why did they come up with this concept of black bile?

Justin:

Mm-hmm.

Sydnee:

So one theory is that, um, if you bleed certain places, and that blood gets digested or broken down to a certain degree, it'll look black.

Justin:

Mm-hmm.

Sydnee:

So, like for instance, if you're bleeding in, like, your stomach or your upper intestines, and it makes it all the way down the GI tract and then you poop it out, it can look kind of black.

Justin:

Okay.

Sydnee:

And we call that melena, it's, like, black stick, tarry stools. Um, if you have that, you may be bleeding, please go see your doctor. And if you throw up blood, it can kind of look black. We call that coffee grounds.

Justin:

Hmm.

Sydnee:

So that's...

Justin:

Appetizing.

Sydnee:

Right.

Justin:

Great.

Sydnee:

So that's one theory is that maybe that's where black bile comes from-comes from. The other theory I kind of like a little more, it's very poetic, is that we had this idea that the four humors were tied to the four elements, earth, air, water, fire, so we just needed a fourth. [laughs]

Justin:

So it's made up just so there'd be four of 'em?

Sydnee:

It's just, it's more of a philosophical balance, like, it just felt right that there should be four, hence black bile. There you go.

Justin:

That sounds about right for medicine at the time.

Sydnee:

Yeah.

Justin:

Aesthetics over practical...

Sydnee:

Pretty much.

Justin:

... application, yeah.

Sydnee:

Like, it sounds good and nobody can prove us wrong.

Justin:

Right.

Sydnee:

Um, Hippocrates went on to describe the texture of the spleen, uh, from, presumably from dissecting. [laughs]. You know, I don't think he could just tell, like, based on somebody's, the way they look or the way they act. Uh, and he talked about how it was soft and it was fibrous. Aristotle wrote about it as well, and he was able to locate it in the body.

Justin:

Mm-hmm.

Sydnee:

So we know it's kind of, like, in what we would call your, uh, left upper quadrant.

Justin:

Mm-hmm.

Sydnee:

Do you know what I mean by that?

Justin:

Hmm, yeah.

Sydnee:

I guess it's a little self explanatory. We divide the abdomen into four quadrants.

Justin:

Sure, yeah.

Sydnee:

The left upper one. That's where your...

Justin:

That makes perfect sense.

Sydnee:

That's where your spleen lives. Um, and he, uh, it was initially thought, after Aristotle kind of wrote where it was, and then after seeing dissections like of the spleen in relation to where the liver is, which the liver is over in your right upper quadrant...

Justin:

Okay.

Sydnee:

...so opposite from the spleen. Uh, it was thought that maybe the spleen was like a left-sided liver.

Justin:

Okay.

Sydnee:

Because the liver was known to be a really important organ, so then...

Justin:

So it's like the parallel, it's the...

Sydnee:

The anti-liver.

Justin:

Okay, yes. Right.

Sydnee:

The bizarre liver.

Justin:

The Betty to the liver's Veronica.

Sydnee:

Well, yes. Yeah, sure.

Justin:

Great.

Sydnee:

Well, they thought that they did the same thing, though.

Justin:

Oh.

Sydnee:

And see, like, if we're gonna start talking about Betty and Veronica, you're gonna take me down a whole other road, because like they're very... I know that they would look the same if you just switched their hair, but they're very different.

Justin:

So like the, not the Goofus to the liver's Gallant? It's, like, they're very different.

Sydnee:

Right.

Justin:

So they're the same...

Sydnee:

They're like the Romulus to the liver's Remus.

Justin:

Don't— I don't understand what you're saying.

Sydnee:

Okay. Anyway, it was thought it was a left-sided liver. [laughs].

Justin:

Okay, got it.

Sydnee:

The found—

Justin:

Now I get it.

Sydnee:

Like Rome, the founders of Rome, the two boys nursed by the wolf?
Founders of Rome, in myth...

Justin:

You—

Sydnee:

In mythology.

Justin:

You're having an episode. I don't—

Sydnee:

Okay.

Justin:

I don't know.

Sydnee:

Anyway, so, uh, what's interesting about this concept, that maybe the spleen was a left-sided liver, is that the spleen is actually typically much smaller

than the liver, and so you would think that just by looking at the two organs you would know that they didn't do the same thing.

So then- so then we start trying to contemplate like, well, why would they think that the spleen did the same thing as the liver? Like they look different, they're different sizes, they clearly are different organs. And this is, this may have been related to the prevalence of malaria in human history.

Justin:

What do you mean?

Sydnee:

Because malaria, if you get it, especially if you get exposed to malaria over and over again over a long period of time, so people in areas where malaria was endemic who would have gotten it lots of times, your spleen can get big.

So maybe early anatomists thought that the spleen was just much bigger than it really is, and so if you just saw the two organs about the same size, because a really enlarged spleen may be as big as a liver, maybe it's a left-sided liver.

Justin:

Do...

Sydnee:

So malaria maybe why we got this wrong.

Justin:

But do you actually think they literally thought that it was like the liver?

Sydnee:

Yeah, they thought it just was the liver, only on the left.

Justin:

Just in the, like as the, as in like lungs? There's two of 'em.

Sydnee:

Yeah, like you had paired— Like it was a paired organ, exactly.

Justin:

Okay.

Sydnee:

Yeah.

Justin:

Um, now I have a quick question, is that accurate? Is that what the spleen is?

Sydnee:

No, it's not a left-sided liver at all.

[Law and Order stinger]

Justin:

[Southern accent] Your Honor, um, I am the, uh, defense attorney here. I'm prosecuting the spleen as being useless.

Sydnee:

Are you Morgan Freeman in this?

Justin:

Um, not, I'm just, like, a Southern lawyer. Uh, let the record show that Dr. Smirl-McElroy has talked for 12 minutes and 45 seconds, just made up stuff about the spleen, Your Honor.

Sydnee:

[laughs].

Justin:

Just not a single fact in there, so let the record show she is totally stalling.

Sydnee:

Just because the spleen will not, by the end of this podcast, turn out to be a left-sided liver does not mean that it has no use. Justin, I would posit that you are not a left-sided liver and yet I have somehow found a use for you [laughing].

Justin:

Your Honor, the prosecution rests, we will hear more...

Sydnee:

[laughs].

Justin:

... of Dr. Smirl-McElroy's case. I don't know why I keep on calling you Dr. Smirl-McElroy, it's weird.

Sydnee:

I don't know. I don't...

Justin:

Dr. McElroy.

Sydnee:

I don't go by that, I go by Doctor... I mean, my dad would love that, so you can call me that all day if you want.

Justin:

Dr. Smirl-McElroy.

Sydnee:

Um, this also led, uh, maybe, this may be the reason that everybody agreed that the spleen had no real, uh, useful function because, this is what people thought at the time, because the spleen was enlarged in many people. This is, again, we're going with this theory, because of malaria. And so, it was thought to be a hindrance to athletic performance.

Justin:

That you have it, or just that it would like get inflamed and—

Sydnee:

Well, the theory was that it just inherently was, but the reason behind it may have been because so many people's were enlarged. So yes, having an enlarged spleen puts you at risk for... It's the reason why we tell you if you have mono, don't play any contact sports, because mono can cause your spleen to get big, and then if you get hit in the stomach where your spleen is, your spleen can rupture.

Justin:

Mm-hmm.

Sydnee:

Which is bad.

Justin:

Yeah.

Sydnee:

It's a very vascular organ, it's very bloody.

Justin:

Mm-hmm.

Sydnee:

You know, it's bad. So it may have been—

Justin:

Of all the organs to be felled by, imagine being felled by the most useless one in your body.

Sydnee:

No. No. Okay, but... Uh, to your, it's not useless, but to your point, the appendix, so just saying. Many people are felled by the appendix and it's useless.

Justin:

Gotcha.

Sydnee:

Anyways, so let me...

Justin:

So it's like a left-sided appendix.

Sydnee:

No, it's not.

Justin:

That's what the spleen is, it's a left-sided appendix. [laughs].

Sydnee:

Let me take this one step at a time. Everybody... Okay, at this time period, a lot of people had malaria, hence a lot of spleens were really big. Nobody knew that they were big because of malaria, they just thought like, well, the spleen is just this really big cumbersome annoying organ, and nobody knows what it does.

Justin:

Mm-hmm.

Sydnee:

And it's really big, and if you play basketball with a big old spleen and somebody elbows you in your big old spleen, it ruptures and you die. So spleens are bad.

Justin:

Mm-hmm.

Sydnee:

And as a result, throughout like Greek, Roman, Egyptian, Babylonian writings, you can find all these references to ways to shrink your spleen.

Justin:

[laughs]. In ancient Cosmo, I'm sure there were...

Sydnee:

[laughs].

Justin:

... five ways to shrink your spleen now.

Sydnee:

Five—

Justin:

Give your—

Sydnee:

Five sexy ways...

Justin:

Give—

Sydnee:

... to shrink your spleen for summer.

Justin:

Give your man the tiny spleen he's always dreamed of.

Sydnee:

So there were different kinds of potions that you could take and drink that might shrink your spleen, there were poultices you could apply to your left side to try to make your spleen smaller. Um, there were even descriptions of way to cauterize, so, like, burn, the left side of your body to try to shrink or destroy your spleen. These are all really bad ideas.

Justin:

Yeah.

Sydnee:

Um, because you, one, you need your spleen, and two, if you just, like, damage it, that's, you could— You could kill yourself. Uh, Galen, uh, being the staff surgeon for the gladiators, which I didn't know he— I didn't know he served as that.

Justin:

Oh, yeah.

Sydnee:

Yeah, so he was...

Justin:

Cool.

Sydnee:

... a surgeon for all the gladiators, which was...

Justin:

That's cool.

Sydnee:

... probably a messy job. Uh, he was obviously able to look at a lot of spleens.

Justin:

Mm-hmm.

Sydnee:

Uh, he developed a theory that persisted for a while that the organ, uh, aided in digestion somehow.

Justin:

Mm-hmm.

Sydnee:

That it was somehow connected to the stomach, I mentioned that that was the thought for a long time, and that it would take fluid from the liver, and then break it down and send whatever couldn't be broken down to the stomach, and then it would go from the stomach through the GI tract, through the colon, and be excreted.

Um, he, but he also thought that the liver and the spleen's main function were to just kind of work together to warm the stomach, like they, he thought they kind of enveloped the stomach in like a warm hug.

Justin:

Hmm.

Sydnee:

A warm livery, spleeny hug, and that that was how you digested food is that...

Justin:

Mm-hmm.

Sydnee:

... that those organs would keep your stomach warm, and then you'd digest food. And, um, obviously that's not true.

Justin:

So it's not accurate?

Sydnee:

No, that is not the function of the liver and the spleen [laughing].

Justin:

Uh, so are you gonna, can you tell me what the spleen actually does?

Sydnee:

I'm gonna get to that, Justin, but first thing's first. Why don't you come with me to the billing department?

Justin:

Ah, some more stalling. All right, sounds good. We'll just let you gin up something. I'll give you few minutes.

Sydnee:

Billing department!

Justin:

Let's go.

[theme music plays]

[ad break]

Justin:

So, Smirl, did you come up with anything yet?

Sydnee:

Well, Justin...

Justin:

Cook up any more, uh, spleen tales. [laughs].

Sydnee:

Despite the fact that, uh, just as Justin today has no idea about the spleen, no one in the, uh, no one in the 1500s had any idea about the spleen either. Uh, we—

Justin:

Said that a few times, Smirl, you're running in circles.

Sydnee:

We felt compelled...

Justin:

Show's running out.

Sydnee:

We felt compelled to remove them, uh, which is, I love that about the human spirit, we have no idea what this does...

Justin:

Let's get it out. [laughs].

Sydnee:

Let's take it out. Um—

Justin:

That's people— I can relate to that though, I'm with it, I'm into it.

Sydnee:

Uh, why the first surgeon who performed this procedure in 1549 in Naples did it, I'm actually not clear. I don't know what happened that may have prompted him to attempt to remove a spleen. Uh, it was written up as a successful splenectomy. Um, there is evidence that he may have actually just removed an ovarian cyst instead of a spleen, which is quite another thing altogether.

Uh, either way, we know that by 1590 for sure, we successfully removed what we knew was a spleen, uh, after a trauma, which was the most common reason someone would have had their spleen removed at that point in time, was somebody got punched or stabbed or kicked or something, and the spleen was found to be bleeding, and we didn't know how to stop bleeding other than just, like, get it outta there.

Justin:

Get it out.

Sydnee:

Quick, get it outta there before they bleed to death. Uh, and there are a number of documented splenectomies after that, again, mainly for traumas. In the US, the first splenectomy was done in 1816, uh, and it's kind of a crazy story, a prostitute stabbed a john, stabbed one of her johns in the gut, in the spleen.

Justin:

Mm-hmm.

Sydnee:

Uh, and the guy was basically bleeding to death through this big hole, uh, in his abdomen where his spleen was poking out through. And so the doctors,

not really knowing what to do because he just kept bleeding, just kind of lopped off everything that was sticking out of the hole.

Justin:

Ugh.

Sydnee:

Uh, and the guy survived.

Justin:

Great.

Sydnee:

Proving that you didn't need the whole, at least he didn't need the, whatever part of the spleen they...

Justin:

Any—

Sydnee:

... managed to cut off.

Justin:

Really any.

Sydnee:

Um, many more splenectomies were done throughout the 1800s, uh, but the results weren't promising for the most part due to bleeding and infection and all the other reasons that surgeries back then weren't very effective.

And eventually, we got good at it by the 1900s, and survival got better and—and all that, but, um, but it's interesting that we have this, even before I'm gonna tell you how we figured out what the spleen did, we have this long history of removing spleens [laughing]. Because why not?

Justin:

Yeah, let's get it outta there, what do you need it for?

Sydnee:

You've already got a right-sided liver.

Justin:

Just another thing that can go wrong.

Sydnee:

So throughout the 1600 and 1700s, we began to understand that all of our thoughts about, like, digestion and, like, black bile and all that kind of stuff were probably wrong as far as the spleen was concerned. Uh, we were pretty sketchy on what it did do.

We still thought that it had something to do with mood and temperament, uh, which is a weird thing. Even after we were starting to, like, let go of this idea of black bile, we were still, like, "Well, but one way or another we know that the spleen is involved with you being really down," like Eeyore is very splenic.

Justin:

Right.

Sydnee:

You know? Very spleeny guy.

Justin:

I've never heard splenic, is that a word you came up with or is that a real thing?

Sydnee:

Well, it's not a— I don't think you— I don't think it's used that way. [laughs].

Justin:

Okay. [laughs].

Sydnee:

As a word. Like, there's a splenic vein, but I don't think you can use it in this context.

Justin:

[laughs].

Sydnee:

Um, and we also expanded on the idea that maybe it is a storage organ of some sort, so even if it doesn't store this mythical black bile...

Justin:

Mm-hmm.

Sydnee:

... maybe it stores something else like blood.

Justin:

Or Gushers.

Sydnee:

Or hormones.

Justin:

Or Gushers.

Sydnee:

Like actual Gushers?

Justin:

Yeah, gummy candy Gushers, you've gotta store 'em somewhere when you eat 'em.

Sydnee:

Do you mean like the spleen is like a package that stores mini Gushers, or you're envisioning the spleen as one giant spleeny Gusher?

Justin:

No, it stores Gushers, it's one place to keep your Gushers.

Sydnee:

Do you swallow your Gushers whole?

Justin:

Oh, yeah, don't you? Otherwise if you bit 'em, the goo comes out, it's disgusting.

Sydnee:

I think that's the whole idea.

Justin:

Sydnee, uh, we just hit 25 minutes, 26 minutes. Congratulations, everybody, we, uh, we basically did it, the spleen doesn't have any purpose.

Sydnee:

I'm not there yet, hold on.

Justin:

Okay.

Sydnee:

So the spleen was thought to expand and contract to hold blood and hormones and what other, whatever other fluids we needed it to hold. Um, like, for instance, there was a thought that if you got really angry, part of what was going on is that you had too much blood circulating, and your arteries were all engorged with blood, and you might have a stroke if that happens.

So the thought was that, like, the spleen was like your fail safe kind of mechanism, like, "Oh, there's too much blood, quick," and the spleen would, like, expand and hold all the blood, and your spleen would get really big.

Justin:

[laughs]. Until you calmed down?

Sydnee:

Until you calmed down.

Justin:

Hold on, let me take that. You need to chill out, buddy.

Sydnee:

It was also thought, along these same lines, that the reason that, uh, pregnant women got nauseous and vomited a lot was because another function of the spleen was to like hold the menstrual blood until period time, and then it would somehow send it to the uterus.

Justin:

So the spleen basically in this permutation is like the body's fanny pack.

Sydnee:

[laughs].

Justin:

Whatever the body doesn't have room for, it just moves to the spleen.

Sydnee:

Exactly.

Justin:

It unzips the zipper, it puts its map of, uh, Tomorrowland, it puts its map of, uh, all of Epcot into there, and its wallet.

Sydnee:

Its little disposable camera.

Justin:

Little disposable camera with Mickey in the corner.

Sydnee:

[laughs].

Justin:

And it just stores it all there in the spleen.

Sydnee:

Um, and this was why, if it was— You could see in this context, if it was storing all of this menstrual blood, that you're not, you know, getting rid of because you're not having periods because you're pregnant, that you would get really sick because of all the period blood. That's not how that works.

Justin:

No.

Sydnee:

No. Uh, we did begin to understand the vasculature of the spleen, so like the fact that there were all these blood vessels going in and out of the spleen, and the existence of what I'm going to tell you about in a little bit, it's called the white pulp of the spleen.

It wasn't until the 1800s that we began to understand what the other part of the spleen, the red pulp, does. Um, which, again, I'm gonna tell you about in a minute.

Uh, but this was a— This part was a particularly tough sell for people, and it was a big hang-up as to why we didn't understand what the spleen did for a long time, is that the red pulp is responsible for removing old red blood cells from circulation.

Justin:

Okay.

Sydnee:

So, like, your red blood cells that carry hemoglobin, that carry oxygen, right? You need these.

Justin:

Mm-hmm.

Sydnee:

They have a time, like, they have a lifespan. They don't live forever, they're not immortal. So they get old, they get damaged, they need to be removed

from circulation, make room for new, better-functioning, healthy red blood cells.

Justin:

Got it.

Sydnee:

This was a really tough sell for a lot of anatomists, like Virchow, for instance, he was a very famous anatomist who said, "No, cell death only occurs if you're sick. There is no physiologic process where you just have cells destroyed and dying." Well, of course that's not true.

Justin:

Right.

Sydnee:

So, once we finally got over that hang-up, we were able to kind of accept part of what the spleen did. Uh, throughout the 1800s, there was a lot of debate on did the spleen destroy red blood cells or did it maybe destroy white blood cells, or did it maybe make them?

We knew it had something to do with blood cells. There's this great series where this naturalist, Edward Crisp, in 1855 recorded descriptions of 334 different species' spleens, like, to try to help settle the spleen debate.

Justin:

Oh, yes.

Sydnee:

He just wrote about, like, the size and the appearance and the texture of the spleens of 334 different species.

Justin:

I'll bet we learned a ton from that.

Sydnee:

No, we didn't really learn anything from it [laughing].

Justin:

Oh, no.

Sydnee:

No. I mean, it was just, he just recorded all this information and that was it.

Justin:

The end.

Sydnee:

But if you're ever— I think if you're having trouble sleeping one night, if you can dig up Edward Crisp's...

Justin:

Mm-hmm.

Sydnee:

I'm sure there's like a treatise on this, a description of 334—

Justin:

If I can find somebody to read those in a low tone, that would be, like, ASMR heaven.

Sydnee:

I hope there are diagrams. I hope there are pictures.

Justin:

Next up, we have the...

Sydnee:

Oh, that would be great.

Justin:

A spleen of a baby goat. You can, here, see here it doesn't do anything.

Sydnee:

[laughs].

Justin:

It has no purpose whatsoever. Next slide.

Sydnee:

If we could get that for Charlie...

Justin:

Here's the spleen of a parakeet. It's useless.

Sydnee:

... for a birthday present this year, that would be really great.

Justin:

A spleen book?

Sydnee:

No, the book...

Justin:

A book about—

Sydnee:

Edward Crisp's description of 334 species' spleens.

Justin:

Oh, that makes 30 minutes. Wow, I did not think you'd make it 30 minutes without even saying that the spleen was in any way useful.

Sydnee:

Okay, in the 20th century we began to understand what the spleen does and doesn't do, and why we need it.

Justin:

Hold on, let me—

Sydnee:

First of all—

Justin:

Let me get comfy, let me get my drink. Fill me in.

Sydnee:

Okay, the spleen basically has two functions, and as I kind of alluded to, they are, uh, tied to the white pulp, it has one function, and the red pulp has another function.

Justin:

What do you mean by red and white pulp?

Sydnee:

It's just a— it's kind of a way we denote different sections of tissue within the spleen. One appears kind of whiteish, one is reddish, and so there you go. Um, the white pulp produces white blood cells, which obviously help you fight infections, so they're...

Justin:

Mm-hmm.

Sydnee:

... part of, you know, the system, part of your body's immune system.

Justin:

Okay.

Sydnee:

They help you fight off certain kinds of bacteria, and they also help these cells mature. What's important about specifically your spleen in terms of your immune function is that if you have your spleen removed, while you still can fight off infections, you are very bad at fighting off infections from what we call encapsulated bacteria, which are certain kinds of bacteria like, uh, pneumococcus, for instance, pneumonia, or meningitis. You've heard of that.

Justin:

Mm-hmm.

Sydnee:

Okay, you look— You should look scared there. Ooh, meningitis.

Justin:

Ooh. Ooh, gosh, the vapors.

Sydnee:

Ooh, meningitis. Haemophilus influenzae. There are some other encapsulated bacteria that can cause some really serious infections that, if you don't have a spleen, you lose your, kind of, natural, any immunity to it you have. So which is why people who have their spleens removed have to get special vaccines that maybe, or special boosters that maybe they wouldn't have had to get yet, or wouldn't have had to get these boosters otherwise.

Justin:

I dig it.

Sydnee:

Um, the red pulp part of the spleen is the part that I already mentioned, it helps to remove old red blood cells from circulation, which is super important so that you just don't have countless numbers of damaged old dysfunctional red blood cells circulating. Um, it also can help store extra platelets and phagocytes, other kinds of cells that can rush to the sites of inflammation and infection when needed. So, you need your spleen.

Justin:

Mm-hmm.

Sydnee:

You can live without it, yes.

Justin:

You don't need your spleen, you—

Sydnee:

But the only reason you can live without it so well is because of our modern medical technology that allows us to do certain things for people who don't have spleens to help keep them safer and, you know, deal with any problems that may arise.

Another cool thing about spleens is that there is a cell line that is used very prominently for research for different reasons called the Mo, M-O, cell line, uh, that was derived from a spleen that was removed from a leukemia patient back in 1976. The really cool thing, or interesting thing, about this case is it triggered this whole debate as to who owns an organ after it's been removed from you.

Like is it your spleen anymore? Because then the University of California patented the cell line and started selling it, and then the patient sued the university because they were, like, "Hey, that was spleen and you're making money off of it." But then the question was, like, could the patient have ever known the intrinsic value of the cells of his spleen?

Justin:

What'd they decide?

Sydnee:

They ruled for the university.

Justin:

Oh. Huh.

Sydnee:

But then they did make certain, um, they did set certain terms where like you have to, like, tell a patient ahead of time, "Hey, we're gonna remove your spleen, we might use it for research." And then you have to be cool with that.

Justin:

Yeah.

Sydnee:

Like you have to be informed and be aware and that kind of thing. But it's a really interesting debate about like...

Justin:

So in this modern era, you don't need spleens.

Sydnee:

No, you do need a spleen.

Justin:

But you don't need a spleen.

Sydnee:

You need a spleen!

Justin:

You don't need a spleen.

Sydnee:

You need... Okay, there are lots—

Justin:

You don't need your spleen today. You don't need your spleen.

Sydnee:

Do you need your teeth?

Justin:

No, because you can get dentures.

Sydnee:

Well, but, I mean, like, isn't it better if you can just keep your teeth?

Justin:

Sure. It would also be better if I, like, drank enough water, but I'm not gonna do that either.

Sydnee:

Do you need an opposable thumb?

Justin:

Uh, yes.

Sydnee:

But you can live without it.

Justin:

No, without it, I...

Sydnee:

Whoa.

Justin:

I am but an apeman.

Sydnee:

Whoa, you can live without it.

Justin:

What? This show's gone on too long. I rule for mistrial [laughing]. The jury's still out because they left on whether or not you need your spleen.

Sydnee:

I hope you have all been educated as to the importance, the beauty, and the wonder, and the mystery that is the human...

Justin:

Nature's reject, the spleen.

Sydnee:

... the human spleen [laughing].

Justin:

The organ what time forget, the spleen. Outdated and outclassed, it's the John Henry of organs because technology has made it pointless. [laughs].

Sydnee:

And I would call it the Austin Powers of organs. It is mysterious, no one quite understands why it exists or where it came from, but we...

Justin:

And—

Sydnee:

... all appreciate it more than we are willing to admit.

Justin:

And it's, in a nutshell, uh, this is, uh, me in a nutshell, baby. Yeah. Austin Powers jokes and more coming up in the next episode, but you're...

Sydnee:

[laughs].

Justin:

... gonna have to wait.

Sydnee:

Nope, that was it. That was the last one ever.

Justin:

It's, uh, for that, uh—

Sydnee:

I'm done with them forever.

Justin:

Uh, listen, if you want a great new podcast to listen to, let me recommend Still Buffering. It is a show starring Sydnee and her delightful sister Rileigh, who is 15, and they talk about the age gap, uh, in between teens. Sydnee gives Rileigh some advice, and Rileigh fills Sydnee in on what the teens of today are into. Let me tell you, I listened to the second episode of the show and it kind of freaked me out about how little I knew about teenagers and how they do stuff these days.

Uh, considering it's gonna be another, like I'm gonna be, before our daughter's a teenager, I'm gonna be 10 years more out of touch. I'm, like, completely hopeless. So, uh, you wanna listen to that show so you can, uh, keep your finger on the pulse. It's called Still Buffering, you can find it on iTunes, it's another Maximum Fun show. Uh, another one I wanna recommend is Shmanners.

Sydnee:

You should also check out Shmanners, it's a lovely new show, um, just adorable and funny and cute, from Justin's brother, Travis, and his wonderful, lovely wife Teresa, where she educates him on manners and etiquette.

Justin:

It's no joke, Teresa sends thank you notes for everything she's, like, way, way better at it than anybody.

Sydnee:

Yes.

Justin:

She's the perfect person to be doing this for Travis, who is the opposite of that.

Sydnee:

So it's funny and cute and charming, and you should check it out.

Justin:

It's on iTunes as well. Shmanners, spelled just the way it sounds. And Still Buffering, listen to those, all the Maximum fun shows actually, at maximumfun.org. Oh, uh, Rose Buddies, as long as we're talking about my brothers' podcasts, uh, and my wife's podcast, Rose Buddies, if you like The Bachelor, you are crazy to not listen to Rose Buddies.

It's my brother Griffin and his wife Rachel as they talk about The Bachelor, do recaps and stuff, and it- it is, uh, it is a wonderful, wonderful companion.

I wouldn't consider watching The Bachelor without it. It's called Rose Buddies, and you can find it on iTunes now.

Uh, I think that's gonna do it for us. Thanks to the Taxpayers for letting us use their song, Medicines, as the intro and outro for our program.

Sydnee:

Thank you also to, uh, Ashley for the lovely pictures of us that we received [laughing].

Justin:

I hung, uh, she sent us some lovely pictures of us with our—

Sydnee:

That she framed and matted.

Justin:

Uh, and it- it's beautiful. I— The picture of Charlie you sent to me, I put on the wall immediately, Ashley, so thank you so much.

Sydnee:

And thank you very much to Corrine, who I had mentioned previously about my awesome knitted frog, dissected frog, that she made me. And, uh, and it's awesome and cool and I love it. Thank you.

Justin:

Uh, folks, that's gonna do it for us until, uh, next Wednesday. My name is Justin McElroy.

Sydnee:

I'm Sydnee McElroy.

Justin:

And as always, don't drill a hole in your head.

[theme music]

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