

## Sawbones 227: Fractures

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**Intro (Clint McElroy):** Sawbones is a show about medical history, and nothing the hosts say should be taken as medical fact 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:** Hello everybody, and welcome to Sawbones: a marital tour of misguided medicine. I'm your cohost, Justin McElroy.

**Sydnee:** And I'm Sydnee McElroy.

**Justin:** Hi Syd.

**Sydnee:** Hi Justin.

**Justin:** What do you wanna do a show about this week?

**Sydnee:** Wow, you're just diving right in there, aren't ya?

**Justin:** That's me, all business.

**Sydnee:** Just ready to go.

**Justin:** Listen, we're headed out to Great Wolf Lodge, I wanna get my magic quest on and I wanna wrap. This. Up.

**Sydnee:** Well, we don't wanna shortchange our audience.

**Justin:** While still doing a great job and keeping it the regular episode length.

**Sydnee:** [laughs] I thought this week— last week, we did something that was a little controversial, or at least I thought it was gonna be controversial.

**Justin:** Yeah.

**Sydnee:** We covered GMO and I expected an onslaught of very angry emails. And I have to say, that really didn't happen.

**Justin:** No.

**Sydnee:** No.

**Justin:** A few haters.

**Sydnee:** A few, but the positive, not— I don't wanna say, like, "People really like our episode, I'm really smart!" No, I'm saying the positive feedback on GMO and the ideas of it and the understanding of it far outweighed the misunderstanding.

**Justin:** Yeah, it was very heartening, honestly.

**Sydnee:** Yeah. So, it made me think that maybe there isn't— while there are people who are still, I think, receiving misinformation, the majority of people maybe aren't? I dunno.

**Justin:** Good.

**Sydnee:** So thank you for all your feedback and yes, I'd like to make— I almost never make corrections.

**Justin:** I know. I saw a few tweets about this, Syd.

**Sydnee:** I misspoke. I said that there are people who live on 8000 calories a day. [laughs]

**Justin:** [laughs] Which, honestly...

**Sydnee:** That's a lot of calories. I meant 800. I just was talking quickly, I was getting impassioned, and I misspoke, and that's it. I got no other excuse.

**Justin:** She just misspoke, folks.

**Sydnee:** I misspoke, I didn't catch it, Justin didn't catch it. But it's 800, not 8000.

**Justin:** I caught it, but I just didn't want you to be embarrassed, so I—

**Sydnee:** Well why didn't you edit it out and let me—

**Justin:** I just put it out on the internet, sorry. [laughs]

**Sydnee:** Why didn't you let me fix it?

**Justin:** I didn't actually notice, that would have been...

**Sydnee:** I do know the difference. I would like to point that out.

**Justin:** Between 800 and 8000 calories?

**Sydnee:** Well, I know that physicians notoriously don't get a ton of nutrition education, but I know that one. Like, that one I got.

**Justin:** Isn't there something that, like, technically when we say calories we mean kcals?

**Sydnee:** Yes.

**Justin:** So you're technically... maybe you're technically right.

**Sydnee:** No. I still think I'm—

**Justin:** Okay, oh well.

**Sydnee:** Well, maybe.

**Justin:** If we could do this, come on, there might be something you can thread here.

**Sydnee:** No, I just misspoke.

**Justin:** No, okay.

**Sydnee:** I meant 800 and I said 8000. There you go. Sorry. [laughs]

**Justin:** [laughs]

**Sydnee:** But we're gonna talk about fractures this week.

**Justin:** Okay.

**Sydnee:** I'm just diving right into that.

**Justin:** Go for it.

**Sydnee:** Thank you Jen, for recommending this topic, and I'm sure other people have recommended it throughout the years, but Jen sent us an email very recently recommending it, so you get the credit.

**Justin:** Thank you, Jen.

**Sydnee:** When I say fractures I'm assuming, Justin, you know what I mean.

**Justin:** Yes, when your bones break.

**Sydnee:** There you go.

**Justin:** When your bones get a break in them. Sometimes—

**Sydnee:** When they get a break in them?

**Justin:** Well, break I think implies completely broken, and fracture doesn't have to be completely broken. Right?

**Sydnee:** Right, yeah, there are different kinds of fractures.

**Justin:** You can get a crack in your bone, which doesn't necessarily mean the bone is broken, per se. I mean it is—

**Sydnee:** Like all the way through.

**Justin:** Like all the way through broken.

**Sydnee:** The bone is broken.

**Justin:** Yeah, yeah, yeah, but you know what I mean.

**Sydnee:** We're getting into semantics. There are different kinds of fractures, for sure. There are simple fractures, where there's just— it's just broken. It's under the skin, it's in one place, it's just broken in there.

**Justin:** Okay.

**Sydnee:** There's compound fractures, which we could also say open fractures, meaning that something's poking through the skin.

**Justin:** Okay.

**Sydnee:** That's bad. That's very bad.

**Justin:** I've never seen one of those, but I feel like I would throw up.

**Sydnee:** I have, I did not throw up.

**Justin:** Oh.

**Sydnee:** But it is bad. It is scary to see. It's scary looking, and then they're much more serious.

**Justin:** Yeah.

**Sydnee:** Your fracture could be displaced, or not. Do you know what that means?

**Justin:** Displaced...

**Sydnee:** It kinda makes sense.

**Justin:** Like, the bones goes in a weird place? [laughs]

**Sydnee:** If you think fracture like, if you imagine one long bone and there's just a crack drawn through the middle of it, that fracture would be non-displaced. The bones are all where they're supposed to be, there's just a break in them. Versus the bone is broken and it has moved out of position.

**Justin:** Okay, I got you.

**Sydnee:** So the ends and not opposing each other the way they should be.

**Justin:** Got it.

**Sydnee:** And obviously if it's not in place, you have to place it. Right? As part of the management.

**Justin:** That sounds so bad.

**Sydnee:** Yeah.

**Justin:** I've never broken a bone, do you know that? I don't know if that's a topic for discussion, but—

**Sydnee:** Well, I haven't either.

**Justin:** Wow, look at us.

**Sydnee:** Yeah, there you go.

**Justin:** Good stock. Good stock we're raising. Indestructible children. Or, children who have... let's call them indoor lifestyles.

**Sydnee:** [laughs] Maybe. I played outside a lot, I played a lot of sports. I just—hardy bones.

**Justin:** Hardy bones.

**Sydnee:** I don't know, lucky. And then there are different kinds of the way the bone can be broken. You know, it can be broken across, transverse, it can be broken up and down, like a linear fracture, it can be like a spiral, kind of spiraling down the bone fracture.

**Justin:** [horrified laugh] Ooh, that's grody.

**Sydnee:** There are greenstick fractures, which are just, kinda like, broken on the edge a little bit. That's the kinda fracture my sister had when she was younger.

**Justin:** Oh, yeah, on the trampoline.

**Sydnee:** Yes. Both my sisters on the trampoline.

**Justin:** Hey everybody.

**Sydnee:** Don't get trampolines.

**Justin:** Don't get trampolines!

**Sydnee:** [laughs] Both my sisters on trampolines. They're fine now. Don't get trampolines.

**Justin:** Don't get trampolines, though.

**Sydnee:** Don't get trampolines. Now, fractures are kinda interesting because we have a long history of trying to treat them, because they're a very obvious malady.

**Justin:** I wanna talk about trampolines again for a second. In terms of medical history. I think trampolines represent the triumph of humans in medicine. Or, more accurately, a hubris that we developed? Like, we were like, "Oh, we've got this. Let's spice it up." [laughs] Like, "We've got everything figured out. Let's see what kind of shenanigans we can get into."

**Sydnee:** They really are pretty dangerous. I mean, you won't find a lot of pediatricians and family doctors, like, people who take care of kids, who would recommend having one or using one.

**Justin:** And don't @ us and say they're relatively safe. Like, I checked the sample size. Two out of three kids break bones, per family.

**Sydnee:** [laughs] Yeah. That's very true. One an arm, one an ankle. Even with the nets, even with the big net around them now. We didn't have those when we were kids.

**Justin:** Nah, we went raw.

**Sydnee:** We just fell off the trampoline. No, so trampolines are pretty dangerous. I'll just say we don't have one. We'll leave it at that.

**Justin:** Yeah. But your parents do. [laughs]

**Sydnee:** [laughs] The treatment of fractures has been described as far back as the Edwin Smith papyrus from ancient Egypt, because people have broken bones as long as people have had bones. And it's very obvious when you break a bone. I mean, usually. There can be kind of hidden occult fractures that aren't immediately recognizable, but if you break a long bone in your leg or arm, you know pretty quickly cause it hurts and then, you know, it looks weird. And so, people have been trying to fix it for a long time. The... I don't know if this is a good or bad thing. Positive/negative. We do a funny show about medical history, so it's kind of a negative for us, but it's positive for humans.

**Justin:** [laughs]

**Sydnee:** We figured out pretty quickly some effective methods to treat fractures.

**Justin:** Stuff that works.

**Sydnee:** So there's a lot of history that isn't particularly...

**Justin:** Well, it's one of the few things where just let it alone, right? Like, it'll actually— like, where they must have tied it all up and, "Oh man, I hope that fixes itself because we have no idea," and then it did!

**Sydnee:** And then it did. And it's very true, I mean, more or less we have understood the idea of reduction of a fracture, which means putting it back in place, since the ancient Egyptians.

**Justin:** Wow.

**Sydnee:** Same thing with, like, dislocation. If something pops out of joint, we've understood kind of how to relocate it for a really long time. With fractures, people will look at an arm and it's hanging at a funny angle, and so they'll kinda pull on it to try to realign it. Which is the basic idea of reducing, or you know, replacing, a displaced fracture. Does that make sense?

**Justin:** Yeah. It's gonna be a short episode this week, huh? That's it.

**Sydnee:** Well, no, I still found some wild stuff in there.

**Justin:** Alright, okay.

**Sydnee:** So, basically, in ancient Egypt you would just kinda pull on the limb until the bone slid back into place. Yes, that's gonna be painful. And then you would apply bandages and honey, because as we've talked about on the show before, the Egyptians were all about honey.

**Justin:** Loved it.

**Sydnee:** Which is helpful in some cases. If you actually had, like, an open fracture, honey is probably not enough there for ya. Because like I said, open fractures are a big deal. It's the infection. I'll go ahead and cover that. If you have a bone poking through the skin, the bone is now exposed to the world of infection that is out there, and that's bad. You don't wanna get infected bones. Those are serious infections that are hard to treat even today, and as you can imagine, prior to antibiotics were almost impossible to treat. So an open fracture is a huge deal and it was a much bigger deal back in the day.



**Justin:** That's a bummer, the— honey is a bummer, because it's like, "Well my arm's broken and now also there's ants all over it. So that's not good."

**Sydnee:** [laughs] You could get away with simple bandages and ointments were applied if it was a closed fracture, meaning that nothing was poking through the skin. They did recognise after a while that if you did have bone poking through, there really weren't a lot of recommendations. Which was just kind of an acceptance that this was not gonna go well. I mean, they knew that, at least. That the severity of an open fracture was most people didn't make it.

**Justin:** Yeah.

**Sydnee:** Nowadays we do know how to treat them. They are a big deal, but we know how to treat them.

**Justin:** Oh, what a relief.

**Sydnee:** I wanna reassure people. Hippocrates had pretty similar advice. He also advised reducing it first, and there are a lot of— if you look back through medical literature, you can find a lot of really elaborate drawings, like diagrams of devices to reduce fractures. Of like, ways to haul somebody up by the arm to replace a humerus where it needs to be. And they look strange and like that can't be right, but the principle of them isn't wrong in a lot of the cases. So, it's not that off-base, it's just kind of a wild contraption to build to replace an arm.

**Justin:** Yeah.

**Sydnee:** But you would reduce it, and then you would bandage it with this mixture of some kinda fat and some kinda waxy substance. So, you know, any kind of animal fat or oil and then wax, beeswax would work. And you would mix it together and it made cerate, and you would bandage it with that, you know, bandages soaked in that, sort of like a cast.

**Justin:** And it would harden into a cast, right?

**Sydnee:** Yeah. Kinda like a cast, exactly.

**Justin:** Cool.

**Sydnee:** You would change this daily, and then after about a week you would apply some splints to hold it in place. The idea was that you didn't wanna apply splints right away because there was gonna be a lot of swelling and you didn't

wanna squish everything together too much initially. You wanted to kinda let that die down and then apply the splints, which isn't a bad idea either. And then because it was Hippocrates, he also had very strict diet requirements for healing from a fracture. Everything Hippocrates came down to diet.

**Justin:** Really?

**Sydnee:** Yeah. He was very big on...

**Justin:** Food as medicine? [laughs]

**Sydnee:** Yeah. Which, again, these aren't wild recommendations. Now, you are not gonna—

**Justin:** They didn't have better ones back then. That or Tylenol? No.

**Sydnee:** [laughs] You're not gonna heal a fracture with diet alone, but eating a healthy diet is never a bad idea. And pretty much as we move into, like, the Roman period, you get the same kind of advice from physicians like Celsus. They just trade in wine for cerate, which isn't as effective in making a cast-like structure.

**Justin:** Yeah, seems like kind of a down-grade.

**Sydnee:** Yeah. Just, you know, Romans and their wine, I guess.

**Justin:** [laughs]

**Sydnee:** Now, Pliny the Elder.

**Justin:** Had to get up in it.

**Sydnee:** I guess, if all of medical opinion was going in one direction, like, "Oh, your bone's broken, we think. So all you have to do is, you know, wrap it in some bandages and keep it in place and then it'll heal on its own." Pliny had to get in there and say, "Well, that seems boring."

**Justin:** [laughs]

**Sydnee:** "I need to say something different."

**Justin:** "Let me mix it up a bit."

**Sydnee:** So, from his natural history, chapter 65, here's what Pliny has to say on broken bones. "For broken bones, a sovereign remedy is the ashes of the jawbone of a wild boar or swine: boiled bacon too, tied round the broken bone, unites it with marvelous rapidity." Now, if that was any fracture but your rib, that would work. Now let's say it was your ribs.

**Justin:** Okay.

**Sydnee:** If it was your ribs, he had a different recipe. "For fractures of the ribs, goat's dung, applied in old wine, is extolled as the grand remedy, being possessed in a high degree of aperient, extractive, and healing properties."

**Justin:** [laughs] "Extolled as the grand remedy".

**Sydnee:** "Extolled as the grand remedy".

**Justin:** Just laying it on a little thick, Pliny, for something you just kinda pulled out of your hinder there, bud.

**Sydnee:** So I like that, that—

**Justin:** "Everybody says this is good, I don't know."

**Sydnee:** [laughs] Everybody's pretty much getting it right, and then Pliny's like, "Nah. I got a whole other idea here." You may wonder too, how exactly did people diagnose a fracture? I thought I'd mention this. It is mentioned throughout many different ancient medical texts that you could feel crepitus of the bones. And that's kinda that sensation, we look for crepitus in different situations in medicine, but if you put your hand on something and you feel, like, that crackling and popping as the bones are moving against each other.

That's crepitus. You can also feel crepitus in, like, an arthritic joint. Like, I'll just put my hand over a knee and have a patient bend their knee back and forth, and I can feel it popping and cracking underneath my hand. If there's trapped air, you can feel crepitus. But anyway, they described this all throughout—

**Justin:** That's the pop in your knuckles, right?

**Sydnee:** Yeah.

**Justin:** Okay.

**Sydnee:** Now, usually when we get to the Middle Ages I tell you we forgot everything about how to treat whatever we're managing, and it was all terrible. We actually didn't. There was a period of time where doctors didn't like to touch patients very much. We've talked about this a little bit before. Part of it was kind of a religious idea. When physicians were closely tied to, like, monks and priests and things like that, touching patients a lot was kind of taboo. And then there was also the fear of getting things like syphilis.

**Justin:** Okay, yeah. That's legit. Don't need to be religious for that, I mean, yeah.

**Sydnee:** There was a time period where it wasn't forgotten, but touching your patient and resetting bones may not have been done as frequently.

**Justin:** Right.

**Sydnee:** But we still— I found this great document, it was like a Dutch middle ages... it's from 1350. And they re-enact these kind of cures and treatments so that they can see what it looked like. And so I found this whole, like, report on how they do this and images and all this kinda stuff. It was very cool. But they detailed how you would have treated a broken leg in 1350. So, first of all, you have to feel the leg.

**Justin:** Feel the leg, Johnny.

**Sydnee:** To figure out where it is.

**Justin:** Okay.

**Sydnee:** Like, you just kinda squeeze along the leg until it hurts, I guess.

**Justin:** [laughs] Great.

**Sydnee:** And then go, "Okay, here's where it's broken." And then you're gonna set it. And the way that they would have set the bone or reduced the fracture, they would have one person like, the guy's laying on the ground, in this picture is just happens to be a guy. It could be anybody. But it just happened to be a guy.

**Justin:** It could be anybody's bones.

**Sydnee:** But they've got one person behind him with their arms wrapped around his chest, pulling him backwards, and then another person, like, pulling on his foot.

**Justin:** [laughs]

**Sydnee:** So basically, and the master surgeon is going to kneel between the two people who are pulling on him and kinda hold the leg to try to work the bones into place.

**Justin:** [groans]

**Sydnee:** I know. And if you accidentally poke a bone through the skin, you just kinda massage it back down to where it goes. This is gonna be bad in the long run, but—

**Justin:** It's bad, it's so bad, though. The one thing is it's so bad.

**Sydnee:** [laughs] After you get that back into place, you're gonna take a bandage and you're gonna wet it with the white of an egg. I actually found that throughout different parts, like, there was some ancient Arabic medicine that suggested the white of an egg as kind of a hardening for the bandage. And you could mix it with milk or wine or just water or whatever. And then you wrapped that part of the leg with the bandage, and you wanna apply it pretty tightly. And then you splint it.

So, they would have taken, like, seven splints for a broken leg and really wrapped them all around. You know, you would want them spaced all around the leg. And then just hold those with some cords and wrap it pretty tightly. Then they have specific things, like they use hollowed elder branches and things so that the cords don't wrap too tightly around the skin and all that. And then after that, you just check it regularly. You reapply wax plasters as needed to hold everything in place.

**Justin:** Okay, legit, legit.

**Sydnee:** So again, kinda like casts. They often used something called black ointment. Black ointment or you also see it called black salve, which is a very similar thing.

**Justin:** You said that in a way as though you might have triggered some familiarity within me.

**Sydnee:** We've mentioned this before on the show.

**Justin:** Ah yes! I remember in perfect clarity.

**Sydnee:** [laughs] I think for syphilis it was used a lot.

**Justin:** We just tested this; you know exactly how much I retain. It's around 75%. Which is not bad, it's very good.

**Sydnee:** [laughs] It had variable ingredients, you'd get different black ointments depending on who made it. But it usually was some kind of mixture of herbs. There was some kind of tar, or oil, or something probably that it gave it the appearance, that made it black.

And then something like beeswax. So it was like a thick ointment with herbs in it, and you would apply it to the fracture. And it was thought to be really good at drawing out bad stuff. Infection is what they were saying, before they said infection, or like, tumors. You will see this, this is wild. I was reading, trying to get a list of ingredients for black ointment, and as I said, it's hard because it was so variable, but you will find this marketed today.

**Justin:** Really?

**Sydnee:** Yeah.

**Justin:** That's weird.

**Sydnee:** Yeah, and it's also marketed as like a—

**Justin:** It's not weird. I said it's weird. Like, I've been around Earth for the past few years, it's not weird. Of course. Let me do my answer again. Well yeah Syd, obviously.

**Sydnee:** And I would watch out for this, because it is marketed as a cancer treatment.

**Justin:** Huh.

**Sydnee:** Yeah.

**Justin:** Huh.

**Sydnee:** Uh huh.

**Justin:** And that's effective?

**Sydnee:** No.

**Justin:** No. Okay.

**Sydnee:** No. But back then, it was used for everything, and fractures in particular. And then basically, you would tell your patient to take it easy for a while, you didn't want them up walking too fast because you wanted the bone to stay where it was supposed to be. And then you would have them use things like crutches for a while to give it a rest.

**Justin:** They had crutches?

**Sydnee:** Yeah.

**Justin:** Sure. That's not hard, I guess, now that I think about it, I shouldn't be that surprised.

**Sydnee:** [laughs]

**Justin:** Fashion those together.

**Sydnee:** So again, none of this is particularly wild.

**Justin:** Yeah, they're kind of doing an okay job. I guess there's only so much you can mess up. What about after, like a little later, after the Middle Ages?

**Sydnee:** Well, I'm gonna get into that, Justin. But first, let's head to the billing department.

**Justin:** Let's go.

[ad break]

**Sydnee:** So let's move on from 1350. By the way, if you're interested in that, I did want to give you the— because I pulled all that from the manuscripts of

Brussels, Cambridge, Ghent and London that were edited by E.C. Leersum in 1912, in case you're interested in all of that.

**Justin:** Hold on, wait, pause the show, I've gotta go do some more heavy reading about fracture treatment.

**Sydnee:** All of that stuff about treating a fracture in 1350. In the 1400s in Anglo-Saxon England, I thought this was really interesting. I found a giant 30-page description of the treatment of fractures. People really loved to write about this stuff. I have a theory, it's because to get into orthopedics it's a very competitive residency. You have to do research. I wonder if all these people are researching the history of fractures. That's my theory. I have no idea. Anyway, so inflicting a fracture on somebody was a serious crime in the 1400s.

**Justin:** Okay.

**Sydnee:** If you broke somebody's leg or arm, you had to pay money.

**Justin:** It's not about what you did, it's about the impact of your actions?

**Sydnee:** Yes.

**Justin:** [laughs] That's fun.

**Sydnee:** Yeah, because you could cause them, obviously, death, if it was like an open fracture.

**Justin:** Sure.

**Sydnee:** Or they may be unable to do whatever to do their job was previously or whatever after that, because we didn't know how to set it properly. So, an arm broken above the elbow incurred a penalty of 15 shillings. [laughs] If you broke somebody's femur, it was twice that. 30 shillings. So there you go. There's the cost of breaking an arm or a leg. In case you're curious.

**Justin:** So a shilling was worth 1/20 of a pound sterling.

**Sydnee:** And this is in 1400.

**Justin:** And this is in 1400, so inflation— you know, it's hard to figure out. But it's like, 75 cents? Today?



**Sydnee:** Probably more.

**Justin:** Probably more?

**Sydnee:** I would think.

**Justin:** No, no, 75 cents in those days. In, what is this, 1400s money?

**Sydnee:** Yeah.

**Justin:** Okay, hold on. I can figure this out, gimme a second. Just let me google for a second.

**Sydnee:** While you're googling, an injury that required crutches afterwards might make you pay higher. Like, if afterwards the person never regained the ability to walk without crutches, you might have to pay more money.

**Justin:** Okay.

**Sydnee:** In general, breaking a leg was worse than breaking an arm, for whatever reason that cost you more.

**Justin:** So this inflation calculator only goes back to 1913. [laughs] So I don't think...

**Sydnee:** So we have no idea. Somebody's gonna tell us. Somebody will, I trust our listeners, somebody will know.

**Justin:** 15 shillings in like the 1400s—

**Sydnee:** Equals how much today.

**Justin:** Equals how much today.

**Sydnee:** You can stick with sterling. It's fine if it's still...

**Justin:** I can put that into the internet.

**Sydnee:** I can handle that, if it's still in pounds. You don't have to—

**Justin:** It would be nice though if you did go— You know what? If you're already doing it, though, please do go the extra step and convert that into USD for me, thank you.

**Sydnee:** [laughs] The basic principles at this point were not that different. Obviously we haven't advanced that much in history, we've just kinda jumped countries. But I did find a lot of mentions of hot baths to relax muscles before you do the reduction, which, it's interesting. Like, a hot bath could relax a muscle. If it's around a broken bone and there's inflammation, I don't know how much it would help. But it's not a terrible idea. Now, I did find suggestions that the patient themselves try to stretch the limb out.

**Justin:** [shudders] No thank you.

**Sydnee:** This is wild to me, because one, the pain alone. I mean, if you broke your femur there's no way you're going to be able to reduce that. Like, just due to the pain. But then also, you had to be pretty strong to do this. I mean, to pull bones.

**Justin:** Strong physically and, like, strong willed. Strong of heart. [laughs] Strong of spirit.

**Sydnee:** Strong willed, yes. [laughs] But also physically strong to pull a bone back into place. And it'd be very hard to have the leverage to do that on your own limb. I think it would be a very difficult thing to do. So I can't imagine that worked very often. There were some specific recommendations for, like, once you had— because I think that was just, "Well, we've reset everything, it's back in place. We might as well throw some herbs and whatnot on it, because we do that for everything else."

**Justin:** Sure, cause you wanna justify the bill. Like, I know you guys love doing that.

**Sydnee:** [laughs] So a couple different kind of exciting concoctions that I found. One was you take the root of the dragon plant, mix it with grease and you make a poultice.

**Justin:** I mean, that sounds impactful. A dragon plant, certainly. Like, gimme some of that.

**Sydnee:** And you could especially do this if the wound was open and you thought there were little pieces of bone in there. So, like a comminuted fracture that broke into more than two pieces. Then the broken bones would kind of appear out of the body if you applied this poultice.

**Justin:** Ugh.

**Sydnee:** But you should only gather this plant in July.

**Justin:** Why's that?

**Sydnee:** I dunno. Cause they said so.

**Justin:** [laughs] Okay, I'll take you word for it.

**Sydnee:** July is the month for dragon plant. There were also recommendations, you could lay bull's dung, warm bull's dung, on the fracture.

**Justin:** Okay.

**Sydnee:** And all will be well after that.

**Justin:** And that'll do it huh? It's all...

**Sydnee:** Mm-hmm. "It will be well with him", is what they say. And for any fracture, you could take a dog's brain laid upon wool and bind that over the place where the break occurred for fourteen days and then it will be healed.

**Justin:** Okay. That's it.

**Sydnee:** I wouldn't.

**Justin:** No, don't. But, if you wanna try, let us know how it goes.

**Sydnee:** No, don't. Don't. No.

**Justin:** I wanna get into this more extreme medicine, Sydnee.

**Sydnee:** I don't want people obtaining dog's brains please.

**Justin:** I don't, thank you. Okay, please, no.

**Sydnee:** Don't, please don't do this.

**Justin:** But if you have the dog's brain already...

**Sydnee:** No.

**Justin:** Lying around.

**Sydnee:** No. [laughs]

**Justin:** Okay, don't do this. I guess don't. I guess.

**Sydnee:** Please don't. In general there's very little that we talk about on this show that we want you to do.

**Justin:** Yeah.

**Sydnee:** I think it's just get vaccinated.

**Justin:** Vaccines, yeah.

**Sydnee:** Yeah. [laughs] I don't think there's much else we want you to do. Go see your doctor and get vaccines. By the time of Paré, and we talk a lot about Ambroise Paré on this show. Lived in the 1500s, revolutionized a lot of pre- and post-operative kind of care and surgery and equipment and all kinds of things.

**Justin:** They named parades after him.

**Sydnee:** [laughs] No.

**Justin:** [laughs] Because he was so great.

**Sydnee:** No.

**Justin:** What are we gonna call this thing? Everybody's marching in a line, there's musicians. What's as great as this?"

"What about Ambroise Paré?"

"A parade, that's perfect."

And then they just snuck the D in at the end, for copyright reasons.

**Sydnee:** Right, uh huh.

**Justin:** This is a stretch. This feels like a— I know as I'm saying it, it feels like a stretch, but I'd already—

**Sydnee:** This is wrong. I think our listeners know this is wrong.

**Justin:** I mean, of course it's wrong, but I don't even think it's funny. [laughs] So that's my problem, where I'm at. I say wrong things all the time, but like, they'll at least land.

**Sydnee:** [laughs] By his time, the basic method of fracture management was already down. And he summed it up, and since then we've kinda been doing it the same way. You restore the bone to its place, second you contain it with some sort of, you know, splint, cast, whatever you've got, and then you do things to prevent inflammation and infection and pain and whatnot while they heal and take time to rehabilitate. And those are kind of the principles of fracture management that kinda stick around even today.

Now, I do wanna take a little side note to discuss bone setters before we end this. Before I get you to today. As long as people have been breaking bones, we need people who can set them. And as I mentioned, reducing a fracture isn't necessarily easy.

**Justin:** Right.

**Sydnee:** You know, it's hard. I mean, you gotta be strong. And you wouldn't have always necessarily had a physician do it. Like I said, sometimes doctors didn't touch patients. And also, you needed somebody pretty strong to do it. So maybe the doctor wasn't necessarily strong enough.

**Justin:** They had, like, one burly person in the office that just...

**Sydnee:** No, you had bone setters. A bone setter may have been somebody with some sort of medical background. You know, certainly there were bone setters who were—

**Justin:** I thought you were about to say "bones". Like, well yeah, Syd.

**Sydnee:** [laughs] Like, in the 16<sup>th</sup> century, you found a lot of monks and nuns who maybe left religious orders, who took their medical background with them, the training they had, and became things like bone setters. But you find bone setters in all cultures. There are actually still bone setters today.

**Justin:** Really?

**Sydnee:** Yeah, in some places. Traditional bone setters, who do this kind of thing, who aren't necessarily what we think of as modern physicians or medical personnel.

**Justin:** They just are very focused on this?

**Sydnee:** Well. It's more knowledge that's been passed down through families.

**Justin:** Okay.

**Sydnee:** You know, it's folk knowledge, kinda thing. So, I wanted to talk about bone setters not so much because that's— I mean, we figure someone had to do this, but because of one that I discovered. Her name was Sarah Mapp, but she was known as "Crazy Sally".

**Justin:** Okay.

**Sydnee:** I think she gave herself that name. [laughs]

**Justin:** Nice.

**Sydnee:** She was born in 1706 to a father that already worked as a bone setter. So her dad already had inherited this family tradition of setting people's bones, right? Had this knowledge. He wasn't always around to set, I guess, all the bones he needed to. Maybe two people broke a bone at the same time. So he wasn't available. So, Sarah started handling some cases for him. Stepping in and kind of inheriting the family business. Now, this would have been very strange at the time.

**Justin:** For a woman?

**Sydnee:** For a woman to be doing this. One because it just wasn't... it was kind of unseemly. It was a big deal for women to be, you know, touching people and doing what a physician or medical person would do. And two, like I said, you had to be pretty strong to do this. So it was usually done by, like, blacksmiths.

**Justin:** Okay.

**Sydnee:** Like, yeah, big, burly people. And here Sarah just kinda took on these cases. And it turned out that she was really good at it.

**Justin:** Nice!

**Sydnee:** Actually probably better than her dad.

**Justin:** Okay.

**Sydnee:** So, she took off and kinda started her own practice, which she called "Cracked Sally: The one and only bone setter".

**Justin:** Oh my God, that's so good.

**Sydnee:** I love this person. She was very successful at it, she won a lot of renown for being so good at setting bones, and so she moved to Epsom. In Epsom there was a lot of horse racing. There were a lot of rich people.

**Justin:** Of Epsom salts fame.

**Sydnee:** Maybe?

**Justin:** Probably?

**Sydnee:** Probably?

**Justin:** Probably.

**Sydnee:** Probably. So there were a lot of rich people and they liked to race horses, and this resulted in a lot of broken bones. So her services were needed in Epsom. So she moved there and started, you know, setting the bones of the rich and famous.

**Justin:** I love calling yourself the one and only something in days before Google. Because there is a chance that somebody will be like, "Alright."

**Sydnee:** "She's the one."

**Justin:** "She's the only one, apparently." [laughs]

"Who are you gonna get?"

"Well, who do you think? She's the only one, look at her business card!"

**Sydnee:** Now, she was doing very well there, but there were a lot of places that wanted her services, because she was becoming famous. And so she was thinking

about leaving Epsom, and the people of Epsom were not thrilled with this. She was the one and only bone setter.

**Justin:** "She's the only one. What are we gonna do, get another one? She's the only one." [laughs]

**Sydnee:** [laughs] So they actually started paying her to stay in town. Just don't leave. We will pay you 100 guineas a year, just to stay here and fix bones when we need you. So they had her on retainer. She was like a concierge physician.

**Justin:** Okay.

**Sydnee:** That's concierge medicine.

**Justin:** I love it. Except for a whole town.

**Sydnee:** Before it existed, yeah. So, she hung out in Epsom so that she could fix all of their bones. She obviously was making a good living. She would travel twice a week to London, and she worked out of the Grecian coffee house, fixing fractures, setting bones.

**Justin:** What do you care, there's no rules, you can do whatever you want. You're paying me to be there.

**Sydnee:** [laughs] And like I said, she was doing very well for herself. So she had a very fine carriage, she had four horses, and she would take this carriage back and forth to London. And she actually would decorate her carriage with crutches that she would get from people whose bones she supposedly fixed so well that they never needed their crutches again.

**Justin:** Oh wow.

**Sydnee:** So the crutches were like a trophy for her.

**Justin:** [laughs]

**Sydnee:** So she would hang them from her fancy coach as she rode back and forth from London to Epsom.

**Justin:** This woman is my hero.



**Sydnee:** She is remembered for this, but she was also remembered for being a little wild. She liked her drink.

**Justin:** Okay.

**Sydnee:** And I don't know if this is true or not, may be apocryphal, but she used to get drunk and wander the countryside yelling profanity and screaming.

**Justin:** Yes!

**Sydnee:** But she is also remembered for being a woman in a male-dominated profession that you had to be really tough and strong to do, and she took it from her dad and took all his customers and went and did it.

**Justin:** She's my favorite.

**Sydnee:** Now, unfortunately, she is also remembered because she is pictured in William Hogarth's "The Company of Undertakers, Consultation of Quacks", a painting from 1736. The idea at the time was that a lot of people who practiced medicine were quacks. Which, I mean, that was 100% true. And so, doctors and people like traditional bone setters alike were pictured in this and a lot of other art and writings and plays and things from the time, kinda saying, "These people don't know what they're doing and they're just as likely to kill you as help you, and you should stay away from them".

And she, because of her notoriety, got memorialized as that as well. As a result, she kind of fell out of fame and favor and ended up not doing as well in her later years. She was one of those who, like, got really big really fast and then ended up dying penniless.

**Justin:** You just can't pan away, can you, Smirl? You just can't pan away. You always have to follow the person to the grave. What is it with you?

**Sydnee:** [laughs] I'm just—

**Justin:** You can't just celebrate— every episode, it's like, "And they did this and they were crushing it, and then well, ah, er, they did die and they're dead, but..."

**Sydnee:** No, I think—

**Justin:** Dying penniless, by the way, great timing. I will say that. Who wants to die with pennies? No way.

**Sydnee:** [laughs]

**Justin:** Burn `em, is thing one. Thing two: just pan away! The camera doesn't have to follow them the whole time!

**Sydnee:** Okay, this is why I mentioned this. Is because as we look back through the lens of history—

**Justin:** And all the dead people.

**Sydnee:** —it's hard to say, did she do a really good job or not? I don't know. We think so. Certainly a lot of people liked her. But as we've talked about on this show, just because people were very big fans of a treatment, or thought it worked, or a certain doctor, doesn't necessarily mean they were good at it. So I don't know. Was she amazing? Was she ahead of her time? Was she behind her time? Was she just making money doing what comes naturally?

**Justin:** I say she rules. You're like both Adam Ruins Everything and the everything. Like, you introduce the thing and then ruin it. [laughs]

**Sydnee:** Just trying to look at things fairly.

**Justin:** [laughs] People were getting tattoos of this woman and you were like, "Well, one thing you do need to know... "

**Sydnee:** All I can say is, I think that were I alive back in the 1730s in Epsom, I would probably have wanted to grab a drink with this lady.

**Justin:** She sounds rock and roll.

**Sydnee:** That's what I would say.

**Justin:** So now, these days, do we have like... radical lasers or pills to fix bones?

**Sydnee:** No.

**Justin:** No.

**Sydnee:** I mean, I feel like we kinda— like I said, these principles of fracture management aren't too different today. Obviously we use an x-ray most of the time, or some sort of imaging. We don't just feel, although you can feel and tell if something's fractured sometimes. Not always. We use imaging to make sure that

we know where the fracture is, and depending on where it is and what kind it is, we may just, like I talked about, reduce it or put it in place, take images to make sure it is in place, cast it, splint it and then do rehabilitation. You know, to make sure that you build up the strength around it and everything heals like it's supposed to.

Sometimes you need surgery, if something is in multiple pieces of very displaced, or just certain locations of fractures might necessitate that you go and put pins and plates and screws and things to hold the bones back together, so that they'll heal appropriately. Cause bones, if they're close enough, will heal. A callous forms, is what they call it, as the bones start rebuilding and healing. But if they're not in place, if they're kind of, you know, just a little bit diagonal or not where they should be, the limb or whatever is broken will never function quite the same. So, you want them to heal in place. So that's what a lot of it is. And then obviously, like I said, if there's an open fracture, infection is a huge concern, so antibiotics would be part of that and that would definitely be a surgical issue. Blood loss, and inflammation and everything else we manage. Pain control, all the other things we do around that today.

**Justin:** Let me ask you a question, Squid. Do you feel like maybe we rested on our laurels a little bit with this one? Maybe we, like, figured, it out early and then didn't spend a lot of energy in figuring out how to do it better and faster and quicker?

**Sydnee:** Well, but we do it pretty— I mean, while we're limited—

**Justin:** I do fine, but I can't do into the doctor's office and then walk out the next day with a healed bone.

**Sydnee:** Well, we're limited by the fact that bones take a while to heal.

**Justin:** Now they do, because we haven't figured out a better way of doing it, is what I'm saying. Technology. Nanobots. Etc.

**Sydnee:** To rebuild the bone?

**Justin:** [quietly] Nanobots.

**Sydnee:** I think, this is my personal opinion, this has nothing to do with research—

**Justin:** We can fix anything. Bones are physical structures. Why can't we just fix them and they're fixed?

**Sydnee:** Well, cause again, it takes time for those cells to heal the bone and grow back together.

**Justin:** Now they do, before, but nanobots, is what I'm saying. Or something.

**Sydnee:** I know, but if we're gonna put a lot of time and energy and research dollars into something, like, a fracture will heal. And I think that if the worst you gotta do is wait a little bit, I don't think that's the end of the world. There are probably other areas where we could stress that.

**Justin:** This isn't me. This is me being selfless. I've never broken a bone, and like, I might eventually, but probably not. So far, it hasn't been an issue for me. I'm worried about other people, not me.

**Sydnee:** I think that if we know how to effectively manage fractures so that people survive and their bones work afterwards, I think we're doing pretty darn good.

**Justin:** Fair enough. Hey Syd, big news. We wrote a book.

**Sydnee:** That's right.

**Justin:** Well, we're writing a book. We're almost done with a book. [laughs]

**Sydnee:** Pretty much done.

**Justin:** We're pretty much done with a book.

**Sydnee:** We're just, you know, editing.

**Justin:** Editing. This Sawbones book, we're writing it, Teylor Smirl, you may know her as Sydnee's sister, but she's also a very— and co-host of Still Buffering, she's also—

**Sydnee:** Of the aforementioned broken arm.

**Justin:** Yeah, she's also an extremely talented artist, and she is doing the illustrations for this book. It's gonna be— if you like the podcast, you're definitely gonna enjoy the book. It's based— it's like, basically a lot of the same topics, but

like, they're in book form, and also like, we're re-writing everything and it's new info and different jokes. Because it'd be weird to do the same jokes over and over again, I guess.

**Sydnee:** No. No, there's a lot of new stuff.

**Justin:** It's a lot of new stuff, and if somebody's not into our show, then this would be a great way to get them into it. Or just like, as a gift.

**Sydnee:** It's great for people who like interesting, like, historical trivia, or gross stuff, or...

**Justin:** Anybody. Honestly, or maybe you think they should like it more. Or they've never experienced it. Or they hate it, and you wanna turn them around. Basically...

**Sydnee:** Everybody.

**Justin:** Just, everybody needs this book and if you go to [bit.ly/sawbonesbook](http://bit.ly/sawbonesbook) you can preorder it off Amazon, or make use of your local bookstore. Your local indie. Go in there and demand it. Kick open the door, say give me this book, I need it.

**Sydnee:** And like our show, it's curse free.

**Justin:** Curse free, no swears.

**Sydnee:** No swears. It's as family friendly as our show is.

**Justin:** [laughs] Right. Some challenging ideas.

**Sydnee:** Yes. [laughs] That's the caveat. You decide what age your kid is ready for this.

**Justin:** Yes.

**Sydnee:** I told my kid about toxic megacolon and she's three, so. You make up your mind, though.

**Justin:** So, [bit.ly/sawbonesbook](http://bit.ly/sawbonesbook). You can preorder that now. It comes out October 9<sup>th</sup>. God willing and the creek don't rise, it comes out October 9<sup>th</sup>.

**Sydnee:** It will, it will. Do you wanna tell everybody where we're gonna be in a couple weeks?

**Justin:** Yes. We're going to be in Columbus at the Columbus Podcast Festival, with Still Buffering and Court Appointed.

**Sydnee:** And many other shows.

**Justin:** And many other shows, those are just the ones—

**Sydnee:** Those are the ones we're related to.

**Justin:** Yeah, that our family makes. We're gonna be performing on Saturday. You can get— one ticket for Saturday gets you into all those shows. Or you can get a weekend ticket and see all the shows in the podcast festival. I say all the shows, but some may be presented at the same time. But regardless, if you go to [columbuspodcastfestival.com](http://columbuspodcastfestival.com) you can get tickets right now. They're very reasonably priced, if memory serves. They are, like, \$20 for a single day and \$40 for a weekend pass. It's Thursday through Sunday. And we're performing on the Saturday, again. May 12<sup>th</sup>, it is. I know it's Eurovision day, I get it, I'm very upset about it too, but we'll figure it out together.

**Sydnee:** Just record Eurovision.

**Justin:** Just record Eurovision on Logo and watch it later. So please come out and see us at that, and I think that's it.

**Sydnee:** That's it.

**Justin:** Thanks to The Taxpayers for letting us use the song "Medicines" as the intro and outro of our program, and thank you to you for listening. We love you. Buy our book. Or, you know what? Just keep being you. That's all I care about.

**Sydnee:** [laughs]

**Justin:** And that's gonna do it for us. So until next week, my name is Justin McElroy.

**Sydnee:** I'm Sydnee McElroy.

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

[theme music plays]

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