

## Sawbones 67: Organ Transplants

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**Clint:**

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:**

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:**

[singing] Holiday season.

**Sydnee:**

That was, that was beautiful. That was lovely.

**Justin:**

Thank you. Syd, I was hoping you would... [laughs] hop in and interrupt me there, but you just left me—

**Sydnee:**

Oh, no.

**Justin:**

... enough rope to hang myself on.

**Sydnee:**

Yeah. No. Uh-uh. If you wanna jump in with it like that, I'm gonna let you keep going.

**Justin:**

It's the holiday season.

**Sydnee:**

Yeah.

**Justin:**

It's exciting.

**Sydnee:**

I'm excited.

**Justin:**

Cup full of cheer.

**Sydnee:**

Yeah. Or something.

**Justin:**

Something.

**Sydnee:**

Some— I mean, does cheer have... Is it alcoholic?

**Justin:**

Yeah, cheer's alcoholic. I don't think there's any question about that. Milk of human kindness is absolutely alcoholic.

**Sydnee:**

So, cheer is. Okay. Then I am all for a cup of good cheer.

**Justin:**

Wassailing. I think wassail is alcoholic. I think it's all pretty much alcoholic.

**Sydnee:**

That, that is not what our episode's about today. But, yes, I agree about that, about the holidays.

**Justin:**

Okay. Uh, I'm getting close to being done on my shopping. Um, just got a few more.

**Sydnee:**

Good for you.

**Justin:**

There's stray items to get.

**Sydnee:**

Yeah.

**Justin:**

Well, us. I mean, we, we tend to give gifts as a pair these days.

**Sydnee:**

That's true. That's true. But you're still ahead of me, 'cause I still have to get gifts for you, so...

**Justin:**

Oh, cool. Okay. Well—

**Sydnee:**

Yeah.

**Justin:**

... let's get 'em.

**Sydnee:**

I mean, I'm going to.

**Justin:**

Yeah, we're getting there. You know, we're just 10 days out and we wanna—

**Sydnee:**

Well, I mean, what do you get for the guy who has everything?

**Justin:**

Uh, you've already given me the greatest gift and your love and our daughter.

**Sydnee:**

Aw.

**Justin:**

Aw.

**Sydnee:**

That's sweet.

**Justin:**

But, yeah, I'm good. I'm, I'm... I feel confident about my gifts this year. I feel good.

**Sydnee:**

So, you're feeling really good about 'em.

**Justin:**

I feel really good.

**Sydnee:**

Yeah. Think they're, like, the best gifts ever?

**Justin:**

Probably the best gifts ever.

**Sydnee:**

Well, you would be wrong.

**Justin:**

Mm. I'm pretty sure.

**Sydnee:**

No. No. They are not the best gifts that anybody's giving this holiday season.

**Justin:**

Okay. Prove it.

**Sydnee:**

I'm gonna give, I'm... Because I'm gonna give that award out to one of our listeners.

**Justin:**

Okay.

**Sydnee:**

They wrote us an email. His name is Adam. And Adam—

**Justin:**

What's this Adam guy got that I don't got?

**Sydnee:**

Well, it—it's more what he doesn't got soon. It's one less kidney [laughs]—

**Justin:**

Oh.

**Sydnee:**

... because he's giving a kidney to a family member.

**Justin:**

Okay. That's pretty good. Okay, Adam, you got me beat—

**Sydnee:**

Yeah.

**Justin:**

... on that front.

**Sydnee:**

I think organ donation, that's probably the best gift you could give somebody.

**Justin:**

I'm holding on to these bad boys. I need both these, these bad boys, keep me at running optimal performance.

**Sydnee:**

For all those horse's necks you keep drinking down this holiday season?

**Justin:**

Yeah. I need doubles. I need two of them.

**Sydnee:**

That's a, that's a beverage, for those of you who don't know.

**Justin:**

Its classic. It's great. Brandy—

**Sydnee:**

Justin doesn't, doesn't eat horses' necks.

**Justin:**

Brandy, bitters and ginger ale. It's delicious. Oh, so crisp.

**Sydnee:**

Mm.

**Justin:**

Anyway, uh, wow, that's amazing, uh, giving a kidney to somebody.

**Sydnee:**

Yes, absolutely. And he was interested in the history of organ transplant, and I thought, you know, if, if he's giving the gift of one of his own organs, the least I could do is give him the gift of a podcast—

**Justin:**

I think that that's—

**Sydnee:**

... about organ transplantation. [laughs]

**Justin:**

I think that that's more than fair. I think we—

**Sydnee:**

I don't—

**Justin:**

... may even be getting the better end of that deal.

**Sydnee:**

Definitely we are. I don't think that this is, uh, equal that. But anyway, thank you, Adam. Thank you for the topic and thank you for donating a kidney, 'cause that's awesome.

**Justin:**

Uh, so, Sydnee, how did we start switching organs around?

**Sydnee:**

Well, this is, as you may imagine, a fairly newer concept.

**Justin:**

Is it a newer concept, or is it a newer thing that we actually did without people dying?

**Sydnee:**

Okay. So, it's a newer thing that we can do successfully. [laughs]

**Justin:**

Right, okay.

**Sydnee:**

There was a—

**Justin:**

'Cause it seems like it's pretty early on to be like, "You know what—

**Sydnee:**

Well—

**Justin:**

... I see his... The part... Those... All those weird bags that he has in his body."

**Sydnee:**

[laughs]

**Justin:**

"I know I need X amount of bags in my body to, to push the liquids around and the humors and what have you. Maybe I could put one of his bags into my body."

**Sydnee:**

Well, yes. I mean, that is true, but in order to do that, you would have to know which of those bags was dysfunctional. So, to know somebody needs a kidney, you have to know they're in kidney failure.

**Justin:**

Oh, okay. That's a good point. Yeah.

**Sydnee:**

Yeah. But you are right in the sense that the concept that if, if one of the, the squishy structures in your body seem to be going afoul, that you could replace it with somebody else's is not new. The Ancient Greeks were said to have attempted organ transplantation, but a lot of this is probably just myth.

**Justin:**

Mm.

**Sydnee:**

I don't think that anyone actually did this, just simply because the surgical techniques wouldn't have even been in place. So, even if you could understand, like, "Mm, this person needs a kidney, you only need one kidney..." 'Cause that was the other step, right? Like, if you're gonna take an organ from somebody, you'd have to understand they didn't need it.

**Justin:**

Mm-hmm.

**Sydnee:**

Um, or I guess you could take it from a dead person. They weren't doing that yet.

**Justin:**

I guess that's true, yeah.

**Sydnee:**

And then you'd have to know how to put it in there and make it work. And they were at least—

**Justin:**

And not get them infected in the process.

**Sydnee:**

Exactly. And there was anesthesia. So, we've talked about this before. There weren't a ton of surgeries before we could knock people out during surgeries.

**Justin:**

Yeah.

**Sydnee:**



Uh, there was a story of an ancient Chinese physician, uh, Pian Chiao, who exchanged, uh, hearts between two men. One man, and this is how he's described, has a strong spirit, but a weak will. And the other man has a strong will, but a weak spirit. And so, he exchanged their hearts in order to achieve balance.

**Justin:**

Oh, but... Well, okay. So, that leaves us with one really fierce, sweet dude, and one dude who's just sort of like, "Meh—

**Sydnee:**

[laughs]

**Justin:**

... I miss my strong will."

**Sydnee:**

[laughs]

**Justin:**

How does he know what a will is anyway?

**Sydnee:**

Well, that's a good question. Which one was he trying to switch, the spirit or the will?

**Justin:**

I almo— It... That's almost enough for me to, to file this one under unsubstantiated.

**Sydnee:**

[laughs] I think this, I think this myth is busted in the reading of it.

**Justin:**

There, there might have been a strong willed man and a weak willed man, but at the end, we could all agree that there were just two dead guys.

**Sydnee:**

[laughs] With no hearts.

**Justin:**

With no hearts and a gaping hole and a guy who realized he was in over his head and he should probably pack his bags and get out of town ASAP.

**Sydnee:**

I'm hoping was arrested.

**Justin:**

Like, uh, yeah, maybe.

**Sydnee:**

Now, I am not... I'm not a fan of telling, you know, uh, like, like... Throwing shade on other doctors, but this may be a malpractice case. This would be a case where I'd have to say—

**Justin:**

Yeah.

**Sydnee:**

"Look, look, I agree."

**Justin:**

"Listen, I applaud your enthusiasm and your zeal, but, uh, but I think you made a misstep somewhere along the way."

**Sydnee:**

I'm gonna say that didn't happen. Uh, just like there's a story of two saints, Damian and Cosmas, who were credited with replacing, um, Justinian, the deacon, his leg. His leg became gangrenous, and so they... There was a— an Ethiopian man who had died, and so they took his healthy leg and attached it to Justinian. But then when you go into, like, the story, like, the saints had been dead for a long time, so then there's a theory that they were from beyond the grave coaching somebody else to do it.

**Justin:**

Okay. So, they're starting to get some, some supernatural elements in there.

**Sydnee:**

I think it's a little—

**Justin:**

Yeah.

**Sydnee:**

... a little sketchy.

**Justin:**

Yeah.

**Sydnee:**

So, I'm gonna say it didn't... it didn't happen.

**Justin:**

I'm gonna put that one under busted.

**Sydnee:**

I think the first actual occurrence of some sort of transplant was probably a skin graft, and I think that counts.

**Justin:**

That makes sense. Sure. Yeah, skin's the biggest organ, right?

**Sydnee:**

There you go. So, so, we're gonna talk about skin graft first, and this probably, for the first time, happened in the India in the 2nd century BC by Sushruta, who was an Indian physician, and, uh, it was an allograft. Do you know what that means?

**Justin:**

Uh, nose—

**Sydnee:**

No. You're, you're—

**Justin:**

... related?

**Sydnee:**

See, you're reading ahead and trying to sound smart, and you got it wrong.

**Justin:**

Dang it. You're right. I... You're right. No, I don't know.

**Sydnee:**

It was from the donor's own body.

**Justin:**

Okay.

**Sydnee:**

Which is probably why it worked.

**Justin:**

And what body part was it from?

**Sydnee:**

They... He actually... What he did is he took skin from the forehead and stretched it down over the nose because it was—

**Justin:**

See, I knew it was nose related.

**Sydnee:**

Yeah.

**Justin:**

I had a sense that it was related to the nose somehow.

**Sydnee:**

It was... Uh-huh. Somehow, magically.

**Justin:**

Somehow, I thought.

**Sydnee:**

I mean, it's good that you can read still.

**Justin:**

Yep. I haven't lost that essential skill.

**Sydnee:**

Uh, it was for a nose reconstruction. Uh, the... I believe the patient had lost their nose. Uh, I think it was a punishment at the time, you could get your nose cut off, uh, and then there we— it happened in battle. I don't remember which one. It was a traumatic nose removal. [laughs]

**Justin:**

[laughs] As opposed to sort of a casual nose removal?

**Sydnee:**

[laughs] Well, as opposed to—

**Justin:**

"Mm, big deal, man. I didn't smell that much stuff anyway."

**Sydnee:**

Okay, it's—

**Justin:**

"I never liked it."

**Sydnee:**

We're gonna talk a lot about syphilis destroying noses, so now you're gonna feel silly.

**Justin:**

Oh, doubtful, but go on.

**Sydnee:**

It was some sort of traumatic nasal amputation—

**Justin:**

Mm-hmm.

**Sydnee:**

... and so, he reconstructed it by stretching the skin down from the forehead, but leaving it still attached there so you would still have blood supply.

**Justin:**

Perfect. Okay. Gotcha.

**Sydnee:**

Um, he also performed skin grafts by removing a strip of skin from your butt and putting it on your face. [laughs]

**Justin:**

[laughs] Nice.

**Sydnee:**

You were a—

**Justin:**

Butt head.

**Sydnee:**

... butt face.

**Justin:**

Butt face.

**Sydnee:**

[laughs] Forever.

**Justin:**

I'm pretty impressed that we understood blood supply, though. That's pretty good.

**Sydnee:**

It's interesting because that's one of the, the keys to, you know, organ transplantation in general, but definitely skin grafting, which wouldn't necessarily be easy to figure out if you didn't know that stuff yet.

**Justin:**

Right.

**Sydnee:**

But it seems to have been figured out pretty quickly. That and the, the way to do the surgery were not the big barriers. So, there are three things to consider, right?

**Justin:**

Right.

**Sydnee:**

We need to get the organ from somebody with tissue.

**Justin:**

Right.

**Sydnee:**

Uh, so either, you know, like, a skin graft, it could be from the person, but if it's a kidney, obviously it's gotta be from somebody else.

**Justin:**

Mm-hmm.

**Sydnee:**

Uh, you've gotta get into the host correctly. So, you've got things like blood supply that you're considering and how to hook it up, so to speak.

**Justin:**

Getting it all plugged in.

**Sydnee:**

Like a new VCR.

**Justin:**

Get the HDMI cord in just the right place.

**Sydnee:**

Exactly. And there's the th—... Now when you plug things into TVs [laughs]—

**Justin:**

Yes.

**Sydnee:**

... do you still use, like, the red and the yellow and the white cords?

**Justin:**

That's called RCA. There aren't a lot of, um, uh, uh... Not a lot of devices use that still. Um—

**Sydnee:**

'Cause the last time I think I hooked something up, it was with something that—

**Justin:**

I can never remember if that's component or composite. I think that's composite. And then the, the red, blue, green, white red, that s— is component.

**Sydnee:**

And, yeah, there's a yellow one, too, right?

**Justin:**

Ye— Well, no, not if you're doing red, green and blue.

**Sydnee:**

Oh.

**Justin:**

Because that's, that's for HD. But most are all HDMI's, which you'll see usually now.

**Sydnee:**

So, basically, organs come with HDMI cords and—

**Justin:**

Basically.

**Sydnee:**

... you've gotta make sure you get 'em in the right colored—

**Justin:**

Basically, yeah.

**Sydnee:**

... little holes in the body.

**Justin:**

Uh, getting... Now, remember, just... There's no colors with the HDMI cord.

**Sydnee:**

Oh.

**Justin:**

Just the one black cord. I don't think bodies can use HDMI even.

**Sydnee:**



We're not equipped for that.

**Justin:**

No, we're not equipped for that. We're, we're too last gen.

**Sydnee:**

That'll be next gen.

**Justin:**

[laughs]

**Sydnee:**

We're still cathode-ray tube bodies. [laughs]

**Justin:**

[laughs]

**Sydnee:**

So, you gotta get it in there correctly. Obviously we don't know how. And then the final thing, which took us the longest to figure out, was you gotta prevent rejection. So, if you're taking an organ from one person and putting it in there—

**Justin:**

If you figure that out, please tell middle school me, [laughs] 'cause I did not do well with it.

**Sydnee:**

Wah-wah.

**Justin:**

Whack-whack.

**Sydnee:**

Is that your Debbie Downer moment? [laughs]

**Justin:**

[laughs]

**Sydnee:**

So, like I said, we had the skills to do the surgery pretty early. Um, and the attempts to reconstruct blood supply, as you noted, we figured that out pretty quickly.

**Justin:**

That's good. But that's li— that's plumbing, right? I mean, that's like—

**Sydnee:**

Mm-hmm.

**Justin:**

They're small, small pipes. But still, the, the idea, the idea is there.

**Sydnee:**

And there were enough people, even though... We talked about this in the, in the episode about, uh, cadavers and—

**Justin:**

Mm-hmm.

**Sydnee:**

... the resurrectionist and all that—

**Justin:**

Mm-hmm.

**Sydnee:**

... that even though there were large swathes of history where it wasn't okay to dissect people, everybody totally was.

**Justin:**

All the time.

**Sydnee:**

They were. They were dissecting people. So, they were figuring this stuff out. Um, and, and as far as the supply of organs, well, we didn't know that it was a problem to take 'em from dead bodies at the time. So, as we've talked about before, we have a long history of taking things from dead people. So, finding a donor wasn't really the problem.

**Justin:**

Yeah.

**Sydnee:**

Uh, the big problem was that we just didn't understand rejection, and so this is why even though way, way back we understood this concept, it isn't until the 1900s that we really succeed in doing it.

**Justin:**

Mm.

**Sydnee:**

So, the first transplant that was successful is in 1905 in th— in what is now the Czech Republic, and it was a cornea transplant.

**Justin:**

Wow, that seems super delicate. Of all the things you would... I mean, this wasn't, like, the heart. That seems pretty easy to figure out. But I guess a heart, it's maybe harder 'cause it dies quicker or something. Like, maybe a, a—

**Sydnee:**

Well—

**Justin:**

... liver or a kidney, those just seem like bags.

**Sydnee:**

Well, you've also gotta consider that the patient, um... Somebody, you know... In order to do a transplant, you know, you, you put so— you take something out, you put something in.

**Justin:**

Right.

**Sydnee:**

When you're putting in a cornea, you're not... Your patient's not in jeopardy the whole time.

**Justin:**

Okay. So, yeah.

**Sydnee:**

If you're trying to—

**Justin:**

Yeah.

**Sydnee:**

... reconstruct a heart valve and you do it wrong or you take too long—

**Justin:**

If you're still trying to figure this out, like, you might as well try something that's not gonna kill you—

**Sydnee:**

Right.

**Justin:**

... if it goes sideways.

**Sydnee:**

Yeah.

**Justin:**

That makes sense.

**Sydnee:**

I mean, that's pretty dicey 'cause, I mean, in order to... You know, at the time, for all they knew, to put in a new liver, you have to take the old liver out, and so then you're kind of on the clock.

**Justin:**

You do have to take the old liver out, right?

**Sydnee:**

[laughs]

**Justin:**

You can't just leave it in there and work around it.

**Sydnee:**

Well, it's interesting, uh, just to skip ahead a little bit, but when you're doing a kidney transplant, you actually don't have to take the bad kidney out.

**Justin:**

What do you do with it?

**Sydnee:**

Ye— The new kidney goes in a different place. It goes in a different location in pelvis.

**Justin:**

How, how could that be?

**Sydnee:**

It just, it works better that way.

**Justin:**

Are you telling me that I have a kidney shaped hole in my body—

**Sydnee:**

The way that it hooks up to the blood supply—

**Justin:**

... where a kidney would fit?

**Sydnee:**

There is the place where a kidney would fit and we figured out that... I mean, 'cause it's, it's unnecessary at that point to take the bad kid— It's not gonna do anything. It's just there. I mean—

**Justin:**

I don't want it in there.

**Sydnee:**

... now, I'm not gonna say there aren't situations where it is... You are supposed to remove a kidney if certain diseases, blah, blah, blah. But for the most part, if you just... You're in renal failure, you need a new kidney, you can just kind of pop it in.

**Justin:**

That's wild.

**Sydnee:**

Yeah.

**Justin:**

That's wild.

**Sydnee:**

It is wild.

**Justin:**

I'd te— I'd insist that they take it. I don't... It's hard enough to lose weight [laughs] I don't need, I don't need an extra kidney in there.

**Sydnee:**

[laughs] We— We've had this debate before, actually, uh, as a medical team, when surgeons were planning on removing organs and we've asked, "Why are you removing it?" And they've said, "'Cause it doesn't work." And it's like, "Well, you don't have to remove it."

**Justin:**

Oh, I am fully, I—

**Sydnee:**

It's a very surgical solut—... You can tell that I'm, I'm in the medical end and not the surgical end of the spectrum because I...

**Justin:**

Sorry, I didn't mean to interrupt.

**Sydnee:**

It's a very surgical thought.

**Justin:**

Go ahead with what you were saying. I just don't want the kidney in there and get that be— get that bad kid out.

**Sydnee:**

So, anyway, the corneal transplant. There had been, uh... Th— I guess the first, like—

**Justin:**

Won't it rot? Won't it, like, rot in there?

**Sydnee:**

The kidney? No. Why would it rot?

**Justin:**

'Cause don't you have to disconnect it? [laughs]

**Sydnee:**

You have to disconnect... [laughs] No.

**Justin:**

Uh, it just, uh—

**Sydnee:**

It just doesn't work.

**Justin:**

Don't you have to unplug it?

**Sydnee:**

No.

**Justin:**

Where are you hooking the new kidney up to?

**Sydnee:**

It's, it's safe and a— it's just a different place in the vascular—

**Justin:**

I think you're trolling me.

**Sydnee:**

No.

**Justin:**

I think this a con.

**Sydnee:**

It's true. Look up pictures of kidney transplants. You'll see.

**Justin:**

Aye, no, I'm good.

**Sydnee:**

If you look at—

**Justin:**

It's the holidays. I'm all right.

**Sydnee:**

[laughs] Anyway, there had been a corneal transplant 68 years before this one, but it was in a gazelle, so I guess we don't count it.

**Justin:**

Nah, those are barely people.

**Sydnee:**

I don't know. Uh, uh, but that gazelle could see so well.

**Justin:**

For miles. Did we transplant that from a human?

**Sydnee:**

No.

**Justin:**

Okay.

**Sydnee:**

It was from a gazelle.

**Justin:**

Okay.

**Sydnee:**

As far as I know, there was no human involved. It was just—

**Justin:**

It was probably gazelle to gazelle, right?

**Sydnee:**

It was just practicing—

**Justin:**

Right.

**Sydnee:**



... on poor gazelles. How do you choose a gazelle?

**Justin:**

You find the one that seems to be tripping a lot, and so—

**Sydnee:**

[laughs]

**Justin:**

... he needs a new cornea.

**Sydnee:**

No [laughs] I mean, like, of all animals.

**Justin:**

Um—

**Sydnee:**

Like, th—aren't they fast? Don't you have to catch 'em? [laughs]

**Justin:**

They, um... They're fast, but that makes sight prob— Visual problems very easy to spot.

**Sydnee:**

Oh.

**Justin:**

You see the one who's, like, kind of taking his time. "Whoa, that rock feels loose."

**Sydnee:**

[laughs] They're the one who keeps taking off running and smashing into trees.

**Justin:**

Right. That guy needs a new cornea.

**Sydnee:**

Um, the first... So, so, I guess that would be considered, like, a tissue transplant. The first kind of organ transplant, so to speak, was, was part of a thyroid. Again, it wasn't a whole thyroid. But part of it was transplanted in

1883, and this was because the Swiss physician who, uh, discovered a lot about thyroid disease, who understood... I think he won a Nobel Prize. Kocher, I believe, won a Nobel Prize for thyroid disease issues. Uh, understood that a goiter was bad. So, you know, a goiter is, like, when your thyroid gland gets all big right there—

**Justin:**

Mm-hmm.

**Sydnee:**

... in the front of your throat.

**Justin:**

Right.

**Sydnee:**

You know what I'm talking about?

**Justin:**

Adam's apple, right? Is it the Adam's apple?

**Sydnee:**

No. But... No.

**Justin:**

Same area.

**Sydnee:**

It's the thyroid.

**Justin:**

Okay.

**Sydnee:**

Yeah. But same area, yes.

**Justin:**

Okay. Good.

**Sydnee:**

Same area.

**Justin:**

Fine.

**Sydnee:**

Yeah, you're fine. Um, so, he removed thyroids that had goiters. So, he would remove the whole gland.

**Justin:**

Okay.

**Sydnee:**

But once your gland, the whole thyroid gland is gone, you get hypothyroidism 'cause you don't make thyroid hormone anymore.

**Justin:**

'Cause you need that.

**Sydnee:**

And so... Yeah, exactly. And he would recognize that every time he did this, these people would develop this syndrome that we now know as hypothyroidism. So, he would put some thyroid tissue back in people, and it would fix it.

**Justin:**

From where?

**Sydnee:**

You know, I don't know. I don't know where he got it.

**Justin:**

Uh—

**Sydnee:**

I just read that he put it back in. I don't know if he would, like... Like, once h— like, once he figured it out, he could take the thyroid out and then remove just a little bit of the tissue and then put it back in, you know what I mean?

**Justin:**

Okay. Is that a transplant, though, really if it's from the same person?

**Sydnee:**

Yeah.

**Justin:**

So, wait—

**Sydnee:**

I've talked about skin grafting from the same person.

**Justin:**

So, so, wait. That's the first organ transplant.

**Sydnee:**

So to speak.

**Justin:**

And that's 1883.

**Sydnee:**

Yes.

**Justin:**

So, how is the first human transplant in 1905?

**Sydnee:**

Well, I think it was because it wasn't the whole organ.

**Justin:**

Okay. Well, that makes sense. Fair enough. All right. Gotcha.

**Sydnee:**

Yeah. If you look at a timeline, most people say 1905 is the big break through.

**Justin:**

Gotcha.

**Sydnee:**

It wasn't a whole thing. It was just a little bit of the thyroid tissue. And then from here on, we have in the early 1900s, everybody's crazy for transplantation. A lot of the stuff they're doing is really practice. They

understand the concept, but they don't know how to do it. So, a lot of the transplants that were going on early on were, were, like, dog transplants, you know?

**Justin:**

Dog to dog.

**Sydnee:**

Dog to dog.

**Justin:**

Not dog to human.

**Sydnee:**

That was attempted.

**Justin:**

Oh, man.

**Sydnee:**

Uh, once, once... I mean, a lot of it... You know, people thought it was just, "Well, once we figure out how to do the surgery..." There was no idea... You know, we didn't understand, like, blood types yet, so we certainly didn't understand tissue matches.

**Justin:**

Mm-hmm.

**Sydnee:**

So, it was, we figure out how to put a kidney in somebody, how to put a— an ovary, a pancreas, whatever, in somebody. Uh, once we know how to do the surgery, what else is there to figure out?

**Justin:**

Right.

**Sydnee:**

You just do it and do it as fast as you can so they don't bleed to death.

**Justin:**

Yeah.

**Sydnee:**

Um, and they tried it with, with kidneys, with adrenal glands, with ovaries, with testicles, with pancreases, pancre—

**Justin:**

Pancreata.

**Sydnee:**

Pancreata. Um, they started doing transplantation of blood vessels, which improved their understanding of how to, you know, fix blood supply to the organs. Um, they, uh, they tried at one point to put rabbit kidneys into a patient.

**Justin:**

No dice?

**Sydnee:**

No. I, I mean—

**Justin:**

I'm assuming that didn't work 'cause they're so little and...

**Sydnee:**

... th— it worked as in, like, they put them in there and they hooked them up. But—

**Justin:**

They're in there, for sure.

**Sydnee:**

But th— [laughs] but then they rejected them. Um—

**Justin:**

And I'm assuming that happened by the patient saying, "Uh, no thank you. These really aren't working out for me. I'd prefer you take them out now."

**Sydnee:**

I mean, that would be better if that was how it happened.

**Justin:**

It that ki— is that how rejection works?

**Sydnee:**

Well, since it's Christmas, we'll say that's the kind of rejection.

**Justin:**

Nice.

**Sydnee:**

And then he went on his merry way without his rabbit kidneys.

**Justin:**

Perfect.

**Sydnee:**

Um, but they really weren't having much success. Uh, so, the, the one area that was expanding was skin transplantation, and mainly because they were taking the skin graft off of a person and putting back on to the same person somewhere else.

**Justin:**

Yeah.

**Sydnee:**

So, you're kind of foregoing the problem of rejection. Um, and this is when I mentioned that syphilis would play a big role.

**Justin:**

Why's that?

**Sydnee:**

Because syphilis, end stage syphilis can destroy the nose, the nasal tissue—

**Justin:**

Mm.

**Sydnee:**

... and so you would get these really deformed... And, and it was a mark that you were, you know, a person who had syphilis. Like, everybody would know.

**Justin:**

Mm.

**Sydnee:**

Your nose was deformed and everybody would talk about you.

**Justin:**

"Get, get away from that guy."

**Sydnee:**

"That person has syphilis."

**Justin:**

"Syphilis Steve."

**Sydnee:**

So, trying to reconstruct syphilitic noses was definitely something you'd want done.

**Justin:**

So hot right then.

**Sydnee:**

Right. Um, and this was actually... We've talked about that show The Knick before.

**Justin:**

Mm-hmm.

**Sydnee:**

And if you watch it, then you've seen this. One of the surgeries they would do is they would take a flap of skin from, like, your inner arm and cut it partially off, and then attach it to your face.

**Justin:**

You're kidding.

**Sydnee:**

And then you would have to walk around with your arm kind of, like—

**Justin:**

Oh, that's—

**Sydnee:**



... draped over your head and the skin attached from your arm to your nose—

**Justin:**

Oh, that's brutal.

**Sydnee:**

... while it grew, 'cause they understood blood supply, right? So, they knew that just taking a big hunk of skin off of the arm and slapping it on the face wouldn't work. So, they waited until the graft, like, took to the skin t— of the face. And this would take weeks, months that you'd walk around with your arm, like, draped—

**Justin:**

Your nose has to be jacked.

**Sydnee:**

Yeah.

**Justin:**

Oh, Go—... That hurts me to think about.

**Sydnee:**

Can you imagine?

**Justin:**

Oh, that's so grody.

**Sydnee:**

And it's from your inner arm.

**Justin:**

So grody.

**Sydnee:**

Ugh.

**Justin:**

You look like a, you look like a deodorant commercial 24 hours a day.

**Sydnee:**

[laughs]

**Justin:**

Brutal.

**Sydnee:**

Um, they also... I thought this was interesting. They, they were experimenting with different kinds of skin grafts. And one was known as a split graft, and it was purely because the tools they used were— they derived from the ones they used for splitting leather in a harness shop. [laughs]

**Justin:**

Wow.

**Sydnee:**

Sounded a little intense.

**Justin:**

Yeah, a little brutal.

**Sydnee:**

Being like, "Hey, you know what this would be great for?"

**Justin:**

[laughs] Get away fro—

**Sydnee:**

"Cool."

**Justin:**

Get away fro—

**Sydnee:**

"Cool, Buffalo Bill."

**Justin:**

Yeah.

**Sydnee:**

"That's awesome." [laughs]

**Justin:**

"That's nice. I'll put some lotion on my skin."

**Sydnee:**

[laughs]

**Justin:**

Uh, so, what, what, what came next, Sydnee?

**Sydnee:**

Well, I'm gonna tell you that real quick, Justin. But before we hit there, let's, let's head down to the billing department real quick.

**Justin:**

Let's go.

[theme music plays]

[ad break]

**Justin:**

All right, Syd. So, how did we overcome the next hurdle in this? Because obviously we still had miles to go on, uh, on transplants.

**Sydnee:**

Exactly. So, over the next... And, and like I said, a lot of this was done from, you know... I said the first transplant was 1905. And when we get to some really successful stuff, it's in the 1950s. So—

**Justin:**

So, it's all relatively recently that we've sort of pieced all this together.

**Sydnee:**

Exactly. And that's as we began to understand rejection was a big thing, the idea that there was something inherent to our body that, that recognized foreign tissue and would attack it, unless sometimes it matched and we sti—you know, we were trying to piece together why did it match sometimes and why didn't it. Um, the other things that, that also played a role were the development of kidney dialysis, for one, 'cause, I mean, part of this is if somebody's organ is failing, you have to keep them alive long enough to get the transplant to them.

**Justin:**

Right.

**Sydnee:**

And so, before we developed things like kidney dialysis or later, like, the heart/lung machine, how were we able to keep people alive without these organs?

**Justin:**

Yeah.

**Sydnee:**

Or keep... Or preserve the organ until we could get it in the person.

**Justin:**

Yeah, that makes sense.

**Sydnee:**

And transportation played a role here, too.

**Justin:**

Couldn't get the organ to the person fast enough?

**Sydnee:**

Before the organ died, so to speak.

**Justin:**

Right.

**Sydnee:**

So, anyway. In 1954, the first successful kidney transplant was performed.

**Justin:**

Yep.

**Sydnee:**

And s— and by successful, I mean that both people lived afterwards.

**Justin:**

How did we pull it off?

**Sydnee:**

They were twins, identical twins.

**Justin:**

Oh. And to this day, the only people that can, uh, get organ transplants are twins.

**Sydnee:**

That—

**Justin:**

And that's gonna do it for us—

**Sydnee:**

Nope. Wait. No. Uh-uh.

**Justin:**

... here on this episode of Sawbones.

**Sydnee:**

Uh, no. No.

**Justin:**

Congratulations, twins.

**Sydnee:**

Let's no... Nope. That's not true.

**Justin:**

Great news for twins—

**Sydnee:**

No.

**Justin:**

... on the new episode of Sawbones.

**Sydnee:**

That is not true.

**Justin:**

Tell me about it.

**Sydnee:**

That's... I mean, certainly, that makes it easier. But, no. Um, we [laughs], we figured out from the fact that that was successful that immunosuppression is necessary, uh, in order to transplant organs that aren't in identical twins. So, basically, we gotta, we gotta stop your immune system from attacking the foreign organ. Uh, initially, we did this with, like, radiation, which is pretty bad, you know?

**Justin:**

Yeah, not great.

**Sydnee:**

Fry their immune system in order to not attack the organ, which was good that they didn't attack the organ, but bad with all the side effects of radiation. Um, eventually, we understood that, uh, matching, you could find people who had the same sort of markers and tissue markers and things and that we could match organ to organ to reduce the, uh, rejection. And then we could also use steroids, were a big breakthrough, to reduce the immune response to the organ.

**Justin:**

Do you know how—

**Sydnee:**

And then as the years go on, there were more complicated immunosuppressants.

**Justin:**

Do you know how matching works? Do you know... I mean, do you per— personally... I know that's not really your field, but...

**Sydnee:**

Well, I mean, a lot of it us just taking, like, your blood cells and, like, running them through, looking for different markers on their surfaces.

**Justin:**

And so, they just match. They just match?

**Sydnee:**

Yeah. And just, you know, coming up with, like, a profile of, of, I don't know, different, like, proteins on the surface of your cells.

**Justin:**

Makes sense.

**Sydnee:**

That's basically all it is. But I don't know, I mean, it's different organ to organ and depending on, you know, what you're transplanting and that kind of thing.

**Justin:**

Sure.

**Sydnee:**

It's, it's the same idea as blood matching, only much more... Many more factors you have to control for.

**Justin:**

Mm-hmm.

**Sydnee:**

Um, after that, after we figured out that part of it, it was followed by a pancreatic transplant, a liver transplant, a heart transplan— This was all in the '60s we figured all this out.

**Justin:**

Nice.

**Sydnee:**

And then by the '80s, we transplanted lungs.

**Justin:**

That's amazing that that happened in my lifetime. That's wild.

**Sydnee:**

It is. It is wild. Because, um, you know, this was, this was a huge lifesaving breakthrough and, uh, the fact that we ever figured out— The fact that we ever figured out rejection is still kind of amazing to me.

**Justin:**

Yeah.

**Sydnee:**

Um—

**Justin:**

Thanks, twins.

**Sydnee:**

Now, this led to a lot of ethical issues. Uh, so, you can take an organ, like, a paired organ like a kidney from a living, willing donor. But when can you from the deceased? We began to understand that you couldn't take kidneys out of somebody who'd been dead for, you know, three weeks—

**Justin:**

Right.

**Sydnee:**

... and transplant 'em. So, when is somebody... When is it okay to take it from somebody?

**Justin:**

Which is more a practical question than an ethical one, I guess.

**Sydnee:**

Well, I mean, it's also brought in the whole idea of, like, brain death—

**Justin:**

Yeah.

**Sydnee:**

... and that kind of thing, uh, which complicated things. And then also, the buying and selling of organs became an issue at this point. So, I think we've all heard the, like, horror stories of people waking up in bathtubs filled with ice and that kind of thing.

**Justin:**

Yeah.

**Sydnee:**

And so, that began to enter into the question, and, and as a result, in some countries, they've actually legalized the sale of organs.

**Justin:**

That's a cool way to inject your economy with some vim and vigor, I guess.



**Sydnee:**

It's really... There are... I read that there are some small communities where half of the population only has one kidney, because they've already sold their other one.

**Justin:**

In the land of people with one kidney, the man with two kidneys is king.

**Sydnee:**

[laughs] And you only get... I think this is kind of cheap. You only get, like, between \$900 and \$1,200 US for selling a kidney.

**Justin:**

That, that miserable, uh, uh, terrible, horrifying statistic kind of has me wondering if I should just buy one to have it.

**Sydnee:**

Just to invest in kidneys?

**Justin:**

Just in case.

**Sydnee:**

I'm gonna say no.

**Justin:**

Okay. Fair enough.

**Sydnee:**

And where would we keep it.

**Justin:**

No. We have no room.

**Sydnee:**

We've got... We have no room. Our house is overflowing. [laughs]

**Justin:**

Diapers everywhere.

**Sydnee:**

Um, there's also a sad history of prisoners who were encouraged to donate organs in exchange for decreased sentencing, which of course is illegal. You can't do that. Prisoners are not allowed to agree to that, actually.

**Justin:**

Mm-hmm.

**Sydnee:**

We consider them... They're, you know... They'd be easily coerced, so they can't agree to a transplant or don—

**Justin:**

Plus a lot of organs is evil.

**Sydnee:**

[laughs]

**Justin:**

They got evil inside 'em. They're cursed. That's a cursed liver you got. You got it from a man on death row. It's cursed. You don't want that bad liver. It's cursed.

**Sydnee:**

It's like that, um... No, that's not that. Never mind. [laughs]

**Justin:**

[laughs] Another great anecdote—

**Sydnee:**

Sorry.

**Justin:**

... from Sawbones. Those hosts are always pulling out the best pop culture—

**Sydnee:**

Shut up. [laughs]

**Justin:**

... reference.

**Sydnee:**

Sorry. I had a reference and it was wrong.

**Justin:**

Like that hip movie, No, Never Mind, I Was Wrong.

**Sydnee:**

[laughs] But the first... You are right in that the first testicle transplant was—

**Justin:**

Oh, thank God you can transplant testicles. I've been wondering this whole time and finally I have my answer.

**Sydnee:**

It was from a convicted murderer.

**Justin:**

[laughs] [singing] Evil balls... Evil balls...

**Sydnee:**

And his, his sentence—

**Justin:**

[singing]

**Sydnee:**

[laughs] His, uh... And they actually had a kid, which is interesting 'cause f— 'cause it was like... I read the headline. It was like, "First child born—

**Justin:**

That is the plot—

**Sydnee:**

... of transplanted testicle from convicted murderer."

**Justin:**

That's the plot of the first Child's Play movie. [laughs]

**Sydnee:**

[laughs]

**Justin:**

Go watch it again. It's probably been a while.

**Sydnee:**

Um, his sentence was decreased, but it wasn't because of the transplant. It was already gonna be. But they kind of insinuated to him... They lied to him and told him that it was related to get him to donate.

**Justin:**

That's a awkward—

**Sydnee:**

So, there was—

**Justin:**

... conversation afterwards—

**Sydnee:**

Uh—

**Justin:**

... like, going through those files.

**Sydnee:**

Some people got in trouble. And let me just say on a side note, 'cause we kind of brushed over this, but as far as the selling of organs, so, in the US, we consider that, well, one, illegal, and two, unethical.

**Justin:**

Mm-hmm.

**Sydnee:**

But there are some people who write papers in support saying that because it, it would take such a small percentage of the population to sell their kidneys to eliminate the transplant waiting list.

**Justin:**

Mm.

**Sydnee:**

And so, then there's this argument, is it wrong?

**Justin:**

God, that's, that's a tough one. I think s— I'll leave that to smarter people than myself. I, I don't know.

**Sydnee:**

It's a very dicey question.

**Justin:**

Yeah.

**Sydnee:**

It's... Yeah. You've got needy people on both sides of this.

**Justin:**

Yeah.

**Sydnee:**

So, anyway, as we go into the 2000s, we are doing all kinds of transplants, um, arms, legs, faces. I think everybody remembers that, the first face transplant was a big deal in the news. Uh, there was a penis transplant done. Um, in 1998, the first hand transplant was done, and it... Actually, in 2001, they had it removed.

**Justin:**

Why?

**Sydnee:**

Psychological rejection.

**Justin:**

It was evil.

**Sydnee:**

Well—

**Justin:**

Cursed.

**Sydnee:**

... the—

**Justin:**

Cursed hand. I knew it.

**Sydnee:**

The guy felt detached and removed from it and like it wasn't part of him and he couldn't handle it and he wanted it off.

**Justin:**

That's the weirdest thing I've ever heard in my life.

**Sydnee:**

It gets weirder. 2006, the first penis transplant was done. Two weeks later, had it removed due to his wife's psychological rejection of the organ.

**Justin:**

Where did they get it?

**Sydnee:**

What do you... [laughs]

**Justin:**

Where did they get it?

**Sydnee:**

I mean, somebody who was, somebody who was, was dead, you know?

**Justin:**

Well, I'm sorry, I don't know this lady—

**Sydnee:**

And, like, not—

**Justin:**

... but I don't—

**Sydnee:**

What, what do you think, like, somebody was alive and they were like—

**Justin:**

I... Well—

**Sydnee:**

"I don't need this anymore."

**Justin:**

... I just need to confirm before, like... I just don't know why we're casting dispersions on this woman for not wanting to have relations with, uh, Tim Burton's the corpse penis.

**Sydnee:**

[laughs] Well, I understand, and I can see where that, that would happen. I'm just saying that that's love.

**Justin:**

Okay.

**Sydnee:**

Can you imagine—

**Justin:**

Smirl.

**Sydnee:**

"Honey, I need you to—"

**Justin:**

Dear. Dear.

**Sydnee:**

"I know that you got..." 'Cause he did, he had a tragic accident, lost part of his penis, got more penis.

**Justin:**

New penis.

**Sydnee:**

Got new penis.

**Justin:**

Additional penis.

**Sydnee:**

Got... Who kno—... Maybe extra. I don't know. I don't know the—

**Justin:**

Second chance—

**Sydnee:**

I don't know the comparative lengths.

**Justin:**

Second chance penis.

**Sydnee:**

Second chance penis. And then she said, "Listen, if you really love me, you'll go back to being the man with no penis." And he did it.

**Justin:**

That poor guy. Uh, how much do you think he was enjoying being able to pee without it looking like an exploding water balloon?

**Sydnee:**

[laughs]

**Justin:**

Probably a lot, right?

**Sydnee:**

Aw. [laughs]

**Justin:**

That poor fella.

**Sydnee:**

It is, it is sad, I know.

**Justin:**

That's sad.

**Sydnee:**

It's sad all around, but he, he decided, he opted out of the penis.

**Justin:**

"I'll take his o—..." There's gotta be a few people who are like, "I would've taken his penis."

**Sydnee:**



[laughs]

**Justin:**

"I could use one."

**Sydnee:**

"Maybe more. Maybe a little extra."

**Justin:**

"Maybe. As long as you've got it."

**Sydnee:**

It's actually really complicated to do that, too.

**Justin:**

I can imagine. There's a lot of—

**Sydnee:**

I'm sure that... You know there was, like, a surgeon who was like, "That took me hours."

**Justin:**

"I started at this man's—

**Sydnee:**

[laughs]

**Justin:**

... penis for the better part of a day."

**Sydnee:**

Um, I thought this was a really cool and, uh, it made me feel good about humanity fact. In 2011... Are you familiar with the concept of, like, an organ transplant chain, what that means?

**Justin:**

Mm, not really.

**Sydnee:**

So, a lot of the time, you may have somebody in your family who needs a kidney, but none of the family members are matches, are tissue matches. So, you have willing donors, but they don't match the person who needs the

kidney. So, they start looking around for other people who may be a match for you, who maybe do need your kidney, and maybe they have a family member who would be a match for your loved one.

**Justin:**

Oh, kind of wheelin' and dealin'.

**Sydnee:**

Yeah. And so, they set up these transplant chains by finding, like, people and family members and connecting everybody. And in 2011, the longest organ transplant chain was completed. It involved 60 people.

**Justin:**

Wow.

**Sydnee:**

30 kidneys were transplanted. That actually stretched in to 2012. End of 2011 into 2012. 17 hospitals, 11 states.

**Justin:**

Pay it Forward 2.

**Sydnee:**

And 30 people got... I know. Isn't that amazing?

**Justin:**

The sequel. That is amazing.

**Sydnee:**

Yeah.

**Justin:**

Uh, folks, thank you so much for listening to our program, Sawbones. We hope you've had some fun listening to it, 'cause I know we had a lot of fun.

**Sydnee:**

And thank you, again, Adam for your great topic and for doing something so selfless.

**Justin:**

Yeah.

**Sydnee:**

And we'll be thinking about you. Good luck. I hope everything goes well for you and your loved one.

**Justin:**

Uh, thanks to people tweeting about the show like Amanda Gabe Bullard, Shay, uh, Hailey Crispin, Corey Dutzen, Mina, uh, Ticker, Professional Nerd, Jess Hill, Katie Winchester, Diana Leonard, Joey Ritollo, uh, Jiggle Benson [laughs], Ladormus. So many others. Uh, you're really the best. We're @Sawbones on Twitter, so it's not hard to, to remember. Uh, you just, you know, find us there and follow us and share and stuff. It's the best.

Uh, thanks to The Taxpayers for letting us use their song Medicines to, uh, open and close our show. Thanks to Cyphe for sponsoring our program.

**Sydnee:**

If you guys have, uh, topic suggestions, please email us.

**Justin:**

We are doing a live show on this Sunday, uh, at 7:00. Doors open at 7:00, show starts at 8:00, right here in Huntington, West Virginia in our hometown. There's still tickets available, so if you wanna go to [bit.ly/candlenightslive](http://bit.ly/candlenightslive), we're opening for My Brother, My Brother and Me, which I'm also a part of. But we're gonna do that show. Uh, it's gonna be fun. Syd, do you wanna say what the topic is in case... Or do you wanna keep it a s— a super-secret surprise?

**Sydnee:**

I wanna keep it a super-secret surprise.

**Justin:**

All right. Well, you'll have to find that out. If you wanna come out, again, uh, that show is Huntington City Hall and go to [bit.ly/candlenightslive](http://bit.ly/candlenightslive). Uh, wanna say thanks to the Maximum Fun Network for having us as a part of their, uh, uh, their, their vast family of programming.

Uh, wanna recommend Bullseye, uh, this week. It's a pop culture discussion show. Um, they had an amazing show with Chris Rock and, uh, uh, uh, John Cleese on a single episode, so that was really great and well worth a listen. Uh, you can find that at [maximumfund.org](http://maximumfund.org).

All right, folks, I think that's gonna do it for us. Thank you so much for, uh, uh, listening. Uh, uh, until next Tuesday, I'm 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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