

## But Why: A Podcast for Curious Kids

### Why Do Baby Teeth Fall Out?

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[00:00:21][Jane Lindholm] This is But Why? A Podcast for Curious Kids from Vermont Public Radio. I'm Jane Lindholm.

[00:00:27] On this show, we take questions from curious kids just like you all over the world, and we find answers. This week, we're taking a look inside our own mouths. We're going to visit a dentist and learn about teeth.

[00:00:48] My name is Arno. I'm 6 years old and I live in Brooklyn, New York. My question is why do baby teeth fall out?

[00:01:00] Hi, My name is Madeline. I live in Winnetka, Illinois. I am five years old and I have two loose teeth. I want to know how loose teeth get loose?

[00:01:09] My name is Kenna. I am 6 years old and I am from Pendleton, Indiana.

[00:01:15] Hi, my name is Audrey. I'm 6 years old. I live in Seattle, Washington.

[00:01:22] My name is Felix. I'm 4. I live in Toronto.

[00:01:26] My name is Vanessa. I am 6 ½ years old.

[00:01:30] My name is Cordell. I am 6 ¾ years old.

[00:01:37] My name is Sam. I am 5 and we live in Tualatin, Oregon and my question is why do our baby teeth fall out?

[00:01:48] I want to know why people's teeth fall out. Why do we lose our teeth? Why do teeth fall out?

[00:01:55] Why do we have both baby teeth and grown up teeth?

[00:02:02][Jane Lindholm] Today we're talking about teeth with a friendly dentist. And I just want to mention that we actually did this interview before many people around the world had to stop going to the places they normally walk or to school, back when it was easier to meet up with other people in public spaces. So I went to see this dentist not too far from where I work here in Vermont.

[00:02:22][Dr. Main] My name Theron Main. I am a pediatric dentist at Timberlane Dental Group in South Burlington, Vermont.

[00:02:29][Jane Lindholm] So we're here in this office that a kid would recognize as pretty standard dental office. There's a funny looking chair that can move up and down and can tilt you back. There are some tools that look really interesting and there's a place where you can sit or you, as the dentist, can stand, and a place where you can get your gloves to put gloves on so you're not touching anybody's mouth with your bare hands. Can you show us some of the tools that you use? Because it's not something that we get to just

hang out in a lot, a dentist's office. And it would be neat to know how you use your actual tools.

[00:03:05] [Dr. Main] Oh, for sure. All right. Let me show you a couple things. Our chairs here will sit up and recline to the point where we can visualize the patient's mouth better.

[00:03:15] I'll hit this automatic button and it'll move the chair up and back.

[00:03:22][Jane Lindholm] There's also a bright light over the chair so the dentist can see inside your mouth while you're leaning back and your dentist will likely be wearing a mask over his or her face because they want to keep their own spit out of your mouth. We're going to talk about baby teeth soon, but do you want to learn a little bit about a few more of the tools a dentist uses?

[00:03:44][Dr. Main] I'm going to operate one of these tools, which is what you would typically get at your cleaning. It's a motorized brush that you get at the dental office. And I use this fancy little pedal on the floor to act to release some air, which goes in the tool to make it spin.

[00:04:06] Sounds a little like a racecar.

[00:04:12][Jane Lindholm] And what does that tool do?

[00:04:14][Dr. Main] It spins a special cup which contains the abrasive tooth polish that we use at your cleaning. It gives you that gritty feel like you're just at the beach and it's a windy day.

[00:04:25][Jane Lindholm] Yeah, it kind of seems like not very spicy toothpaste with sand in it and then they're using a tool to sort of spin it all over your teeth.

[Dr. Main] That's exactly what we're doing.

[Jane Lindholm] But then your teeth feel so good when it's done. They're just so smooth. You kind of want to run your tongue around it all the time. Sort of like after you've gotten your teeth cleaned.

[00:04:43] [Dr. Main] We spend our whole day liberating teeth. I have some tools that we use at a cleaning. They're shaped in a certain way to fit around teeth so that they can remove tartar, which is plaque that is hardened on our teeth.

[Jane Lindholm] What is plaque?

[Dr. Main] Plaque is the germs in the food that gets left around our teeth. If we don't remove it with a toothbrush daily, oftentimes it will look whitish or yellow and it'll feel kind of squishy with your tongue on your teeth. It almost looks like your teeth are wearing sweaters, but our teeth weren't meant to wear sweaters.

[00:05:22] [Jane Lindholm] But you can't even always see the plaque, right? I mean, sometimes you go to the dentist and they'll be scraping away and it's like, well I washed and I brushed my teeth every day. They looked fine to me.

[00:05:32] [Dr. Main] And what they're scraping away is the tartar, the plaque that we can't remove on our own. So despite your best efforts, that's why people go to the dentist at least every six months to have it removed, because even if you're doing the best job you can, there's still a little bit that we leave in our teeth.

[00:05:50] [Jane Lindholm] Alright, so these little scraper tools. What do they sound like? I want to point out right now, just so that you know, kids. He's not even doing it on my teeth or his teeth. He's doing it on the table.

[00:06:02] But it does sound remarkably like what it would sound like if you scraped someone's tooth too.

[Dr. Main] If you wanted some water after you had that gritty toothpaste, we can wash out the mouth with this little straw.

[00:06:26] [Jane Lindholm] That's what you use sometimes when doing something with my teeth and maybe you actually even squirt some water, but you don't want me to swallow it. And you put that straw in and it's that suction thing. But it's so weird because it sort of makes your whole mouth feel like it's going zoop all of a sudden.

[00:06:45] [Jane Lindholm] That's a very cool sound.

[00:06:47] [Dr. Main] The tool that we use to clean the tooth is called a handpiece. Some people call it a drill and it makes a real high-pitched whining noise and it also squirts water to cool it down so that we're not hurting any teeth when we're fixing them.

[00:07:06] [Jane Lindholm] And you're not calling it a drill, but are you actually taking away part of my tooth when you do that?

[00:07:10] [Dr. Main] Typically, you're taking away the part of the tooth that's damaged. So you are removing part of your tooth, but the part of the tooth that was in really bad shape to begin with.

[00:07:22] [Jane Lindholm] That sound might also make, especially some of the adults listening, just sort of shudder involuntarily. Why do you think some people are afraid of the dentist?

[00:07:31] [Dr. Main] Well, I think there's a lot of sounds and sensations that aren't part of our normal routine. So they throw us off a little bit and being at the dental chair, sitting back and having someone, you know, touch your teeth and look in your mouth really closely can be a little scary if you're not used to it.

[00:07:49] [Jane Lindholm] So if you are somebody who feels anxious or hasn't been to the dentist before, what can you say to your dentist or your dental hygienist if you're feeling nervous?

[00:07:59] [Dr. Main] I would say speak up, make them know why you feel the way you do and they'll go through steps to help you out. I think the biggest thing is just to communicate and let them know why you might feel nervous. But it's OK to feel nervous. Everybody's nervous in new situations. And we just want to help you out. And there's ways we can do that.

[00:08:20] [Jane Lindholm] OK, now we know a little bit more about the dentist's office. So let's get to that question you all seem to want an answer to.

[00:08:27] Hi, my name is Eloise.

[00:08:32] Hi, my name is Jack.

[00:08:33] My name is Eva. Hi, my name is Brooklyn. Why do your teeth fall out?

[00:08:40] Hi, my name is Ella and I am 5 years old. I live in Columbus, Ohio. And my question is why do baby teeth fall out?

[00:08:49] My name is Jasper. I live in Jackson, Minnesota. I am 8 and my question is how do teeth fall out?

[00:08:56] [Jane Lindholm] Why do we need two sets of teeth? Why do we need baby teeth and then permanent or adult teeth?

[00:09:02] [Dr. Main] We get two sets to better match the way we as humans eat and grow. We eat a bigger variety of foods as we get older and our mouths are much bigger and we need more chewing power than the baby teeth can provide. If we were alligators and sharks, we could make new teeth whenever we would need them. But that's not the case.

[00:09:25] [Jane Lindholm] So we basically need permanent or adult teeth because for a couple of reasons. One is our heads are smaller, a little bit smaller when we're babies. And so those big teeth would look pretty funny in a kid sized head. But then also you're saying because we eat different food and because we have different behaviors, we actually need teeth that can handle more. They're sort of tougher teeth that we have for the next 70 or 80 or 90 years.

[00:09:48] [Dr. Main] Exactly. The teeth are designed in a certain way. The layers of the teeth that make up the outer shell of the tooth, the outer layer, is called enamel. And it's thicker with a permanent tooth because it needs to be. The inner layer, which is called the dentin, supports the enamel. And that's also thicker in an adult tooth. But baby teeth don't need to be as thick as the permanent teeth.

[00:10:15] [Jane Lindholm] How does your body know when it's time for a baby tooth to get loose and go away? And, you know, as kids know, this happens at a lot of different times for different people. For some of us, we're waiting and waiting and waiting and all of our friends seem to be losing teeth and we're not. It's like, come on, mouth, figure it out. So how does your body know when to lose a tooth?

[00:10:34] [Dr. Main] It's definitely a source of joy for a lot of people and sometimes frustrating for others because I think it becomes almost a rite of passage with a lot of kindergartners and first graders. But as we grow, our bodies have special cells that slowly eat away the roots of baby teeth to allow permanent teeth to take their place. Usually wiggly teeth happens in kindergarten or first grade, but teeth don't grow like your body. They start growing even before you're born.

[00:11:08] [Dr. Main] And the tops of the teeth, called crowns, are already full size when you see them in your mouth. And so they're ready to take action.

[00:11:17] [Jane Lindholm] So are our permanent teeth, our adult teeth, actually in our mouth when we're born, too, or do they grow when you are a little kid?

[00:11:24][Dr. Main] They're starting to develop. So each tooth, each type of tooth, starts to grow at a certain point after you're born. So early on, we call our first set of molars, our six year molars and our incisors. And we're starting to already calcify those crowns or those tops of those teeth. If we were to take an x-ray that young, we can see those teeth already developing.

[00:11:50][Jane Lindholm] I still want to know how though. Is it my big tooth that's pushing my baby tooth out and making it wiggly or does my baby tooth suddenly know it's got to make room and then the big tooth can come up and grow. And how does the tooth that's been sort of hanging out there for a while know how to grow up into my mouth and how does it know when to stop and not just keep going and fall out again?

[00:12:12][Dr. Main] That is a question that actually befuddles scientists to this day. We have identified certain cells that will eat the roots of baby teeth so that permanent teeth can bully their way into the mouth. We don't know exactly why it happens or what triggers it to happen, but we do know that it's related to your particular growth and development pattern. Certain kids are on the early scale. Certain kids are on the late. But almost everybody follows the same sequence of teeth coming in. Typically you get your bottom front teeth first. They start to get a little loose. And then we travel to the top two teeth in the center and they get loose. We call those central incisors. And then at the same time, sometimes before or slightly after, your six year molars grow in. And those are teeth that don't replace any teeth in your mouth. They just grow in because it's time. And then typically we have lateral incisors, which are the incisors next to the central incisors. And then we have first molars, canines and second molars. So in that order, there's a lot going on, especially in the first two years of life.

Hello, my name is Surhabi. I am 8 years old and live in Mobile, Alabama and my question is why do people have two sets of teeth?

[00:13:36] My name is Lucy. I am seven years old. I live in Falls Church, Virginia. My question is why do you not lose your adult teeth?

[00:13:46] [Jane Lindholm] Why not be like alligators or sharks and have four or five sets of teeth and get new shiny ones every now and then?

[00:13:52][Dr. Main] Well, all the animals that I've canvassed that have replacement teeth are definitely not as pretty as the teeth we have, so that would be a disaster. But our teeth are very specialized. The enamel that coats our teeth or the outsides of our teeth is the hardest material found in the body. So they are well equipped to last a long time. But there are certain situations where we do beat up our teeth for a while, so that's when your dentist comes into play. But yeah, it might be nice to just grow a new tooth if we had a big problem.

[00:14:26] [Jane Lindholm] Since you can't grow new adult teeth, you need to keep the ones you have healthy.

[00:14:31] Coming up, we'll talk about ways to do that.

[00:14:36] This is But Why: A Podcast For Curious Kids from Vermont Public Radio, I'm the host, Jane Lindholm and today, we're learning all about teeth and how to keep them healthy with a dentist named Theron Main.

[00:14:48] Hi, my name is Amelia. I am 5 years old and I live in San Antonio. My question is why do babies not have teeth when they are born?

[00:14:58] Good morning. My name is Elsie. I'm 5 years old. I live in Blue Mountains, Australia. My question is how do bodies make teeth?

[00:15:12] [Dr. Main] Teeth are very special because they grow in before you are born. Teeth will form crowns and crowns are fully formed under the gums. And when a tooth appears in the mouth, it stops growing its crown. The crown is already finished.

[Jane Lindholm] What is the crown?

[Dr. Main] The crown is the top of the tooth, the part that you can see.

[Jane Lindholm] Because a tooth also has a root that you don't see.

[Dr. Main] Correct. And the root still grows long after the tooth comes in the mouth, usually for about three years with a permanent tooth.

[00:15:48] [Jane Lindholm] So you were saying before we're born, we actually have the teeth in our mouth. Why don't we have teeth that we can see? Why do they have to grow in in the first place? I mean, if they're already there in our bodies, why don't we just have them to start with?

[00:16:04] [Dr. Main] Well, babies, when they're born, they get nutrition from milk and from formula, so they wouldn't be able to have teeth. They wouldn't be useful. So teeth usually roll in at about six months of age and by between about four to six months is when you'd expect to have solid foods. And so kids would be at a loss to have teeth too early. They'd be tackling things that they couldn't handle with their bodies.

[00:16:35] Hi, my name is Linda. I'm from Franklin, North Carolina. I'm 7 years old. My question is why are teeth white? Thank you.

[00:16:43] [Jane Lindholm] Why are teeth white or kind of white?

[00:16:48] [Dr. Main] Well, teeth are made up of that outer layer that we talked about, the enamel, and there is a component of calcium that's integrated into the enamel that gives it its white color. The layer underneath enamel is called dentin, and that's a little more yellowish or brownish. And so as we age, sometimes we wear away enough of the enamel where the teeth do appear a little more yellowish or a little brownish.

[00:17:16] Hello, my name is Yehudis from New Haven, Connecticut. I'm 7 years old. My question is why do we need gums in our mouths?

[00:17:28][Jane Lindholm] Talk about your gums and I know as a dentist you're gonna tell us why gums are so important.

[00:17:33][Dr. Main] Well, teeth can have as many as three roots. I've actually seen teeth with more than three roots, but that's not typical. And they're stuck pretty tight unless they are baby teeth on their way out and the gums hold the teeth in place. So you really want to take care of your gums to have your teeth stay put. Without your gums, your teeth would have a hard time. They cover the inside of your mouth and your jaws. They also cover your teeth. And with problems that we see, gums can get into trouble and get infected and then the teeth subsequently get in trouble and get infected.

[00:18:14] So that's why we really want to encourage good home care and your mom and dad always ask you to brush before bed and in the morning before school.

[00:18:23][Jane Lindholm] Well, let's talk about brushing because we've got some questions about brushing as well.

[00:18:27] My name is Leah. I am seven years old. I live in Lancaster, Pennsylvania, and I want to know why sugar rots your teeth?

[00:18:38] Ready, set, go. My name is Ellie and I live in Michigan. I want to know how do treats make holes in your teeth?

[00:18:52] My name is Violet. I live in Boston, Massachusetts, and I am six and a quarter. Why and how do teeth rot?

[00:18:59] My name's Moses and I'm eight years old. I live in Vancouver, Canada and my question is how does sugar make cavities? I love your show!

[00:19:10] Hi. My name is River and I'm 4 years old. I live in California. My question is why sugar causes cavities? Bye.

[00:19:23][Jane Lindholm] I think many people who are listening will recognize that they've heard this idea that sugar rots your teeth. You shouldn't have too much sugar. Or sometimes you'll say, can I have some candy and an adult in your life will say no, you're going to get a cavity. You're not going to get a cavity from having one piece of candy. But what's the connection between sugar and cavities?

[00:19:46][Dr. Main] Well, there are germs in our mouth called bacteria that live on our teeth and gums. And certain bacteria love sugar and they create something called acid. Acid makes holes or cavities on enamel. Brushing helps to lessen the sugars and the germs. And also, something called fluoride can help to strengthen enamel against an acid attack.

[00:20:13][Jane Lindholm] So if you didn't eat any sugar at all in your entire life, could you just not have to brush your teeth because you're never going to get a cavity?

[00:20:19][Dr. Main] Not necessarily. We still have to remember those gums we were talking about earlier.

[00:20:24] So there are certain countries where diets don't have a lot of what we call refined sugars or sugars that are very, very sugary that bacteria love. And a lot of those people that live in those areas don't have a lot of cavities. They may still suffer a little bit of gum disease, but the cavity counts are really low.

[00:20:46][Jane Lindholm] But you said we still have to brush our teeth even if we don't eat sugar because of the gums. Because why? Are you trying to what we might call stimulate the gums, like just sort of rub on the gums and that helps somehow?

[00:21:01][Dr. Main] Keeping the gums healthy is done with tooth brushing. You want to clean the tooth against the gums because germs like to live in the little pocket that surrounds the tooth. And even if you don't have sugars, you still have bacteria that hang out in those areas and the gums aren't really happy about that bacteria. So they get really puffy and sometimes bleed. And if you stimulate the gums and you clean the bacteria and take the food away, then the gums will be healthier and your tooth will be healthier, too.

[Jane Lindholm] Is that also why we have to floss our teeth?

[Dr. Main] Exactly. We can't see in between our teeth. So, of course, there are things in between our teeth that are getting stuck and we can't even see germs so they're really in there. And same with the chicken that gets stuck in between that we're trying to get out from last night.

[00:21:47] So it's really important that we try and make it a daily routine.

[Jane Lindholm] Or the piece of celery that's always that little string of celery that gets stuck between your teeth. It's so hard to get out.

[00:21:56][Dr. Main] Oh, for sure. I struggle with that all the time.

[00:21:59] My name is Avi. I am 5 years old. I live in Riverdale, New York. I want to know why you don't swallow the toothpaste when you brush your teeth.

[00:22:08][Jane Lindholm] When you brush your teeth, you're often told, don't swallow it, don't swallow the toothpaste. Why is it such a big deal to swallow something designed to be put in your mouth in the first place?

[00:22:19][Dr. Main] Well, toothpaste is specially designed to help clean teeth. And if it has fluoride, it will actually help strengthen the enamel. But if it is swallowed, it can make your belly upset. And if swallowing large amounts, it can even lead to something called fluorosis, which is little white lines that show up on your tooth enamel.

[00:22:36] Despite its safety, toothpaste is considered a medicine and should be treated and stored carefully.

[00:22:44][Jane Lindholm] Is it a big deal if you swallow a tiny bit, though? How scared do we need to be about swallowing a little bit of toothpaste?

[00:22:49][Dr. Main] A tiny bit is perfectly safe. If you listen to the recommended amounts by your dentist, you'll be in great shape.

[00:22:55] My name is Rosie. I am four and a half years old. I live in San Francisco and my question is why does toothpaste clean your teeth and why does it have flavoring and how does it get made? Thank you.

[00:23:11] Hi, my name is Cam and I'm 8 and I live in Missouri. My question is how does toothpaste work?

[00:23:21][Dr. Main] Toothpaste. It has special ingredients such as abrasives that are made to polish teeth that shine them up.

[00:23:28][Jane Lindholm] So abrasives are like little pieces of grit, not dirt, but like little gritty pieces, but very small, right? So it's sort of because if it was just a smooth thing, a smooth gel or a liquid, it wouldn't do much to sort of rub the gunk off your teeth, right?

[00:23:43][Dr. Main] Exactly. Just like we use sandpaper to kind of polish things up like fine grit.

[00:23:49][Jane Lindholm] Don't use sandpaper on your teeth.

[00:23:54][Dr. Main] They incorporate some abrasives that have tiny little grody elements to polish the outside of the tooth. It also has fluoride to help control cavities and special detergents to help make the foam to make it easier to spread around your teeth in a uniform layer.

[00:24:13][Jane Lindholm] And a detergent is a kind of soap, right? Kind of like a soap.

[00:24:17][Dr. Main] Kind of like a soap. Yeah. It cleans like a soap and it helps it to provide that nice layer that goes over all the teeth, not just part of the mouth.

[00:24:30][Jane Lindholm] So that's why it's so important to brush your teeth. Your teeth are connected to your overall health.

[00:24:36][Dr. Main] Well, the mouth is the gateway to the body. So I think people underestimate your mouth's role in nutrition. Without teeth and without functioning teeth, we often would forego certain foods that may otherwise be healthy for our bodies. And in that sense, you know, we need good teeth because we all want healthy bodies.

[00:24:57][Jane Lindholm] Before I left the dentist's office, I asked Theron Main what it was that made him want to be a dentist in the first place.

[00:25:04][Dr. Main] Actually, it was the dental care I received as a kiddo. My dentist, growing up, was really engaged in the community. And so I thought that he was the most caring person, the way he paid attention to everybody that came into his office.

[00:25:18][Jane Lindholm] I hope all of you have a dentist you like and are able to access good dental care to keep your teeth nice and healthy. Don't forget that in between any visit to the dentist, you should always be brushing your teeth and flossing. Thanks to Dr. Theron Main and Timberline Dental in South Burlington, Vermont.

[00:25:40] That's it for this episode. Remember, if you have a question about anything you think we should answer, ask an adult to help you record yourself asking the question. You can have your adult do it using a smartphone or a tablet on an app like voice memos or voice recorder. Then your adult can email the file to [questions@butwhykids.org](mailto:questions@butwhykids.org). Tell us your first name, how old you are and where you live. We can't answer every question we get, but we do love hearing from you and knowing what's on your mind. But Why is produced by Melody Bodette and me, Jane Lindholm at Vermont Public Radio. Our theme music is by Luke Reynolds.

[00:26:19] We'll be back in two weeks with an all new episode. Until then, stay curious.