

**Howard Farran:** It is, uh, a huge honor to be with one member, uh, a star member of our brand new profession, uh, specialty, the ninth specialty which was the, um, Max oral, maxillofacial radiology. So, when I got out of school, in '87, and uh, there were only eight, and I, I never saw this coming. I have to tell you, at 52 years old, I, um, I remember seeing the first cell phone, a patient walked in and there was this brick with a cord, a brief case, and I said, that's, you know, why don't you just use a phone. I didn't see the cell phone coming. Refresh me, you're at Creighton, I know you, uh practiced in Lincoln, Nebraska, for a while. Uh, refresh me, you were at Creighton in 1980 in Omaha, Nebraska, friend of mine showed me a handy personal computer, and demoed the whole thing to me and I said, That's got to be the stupidest idea ever. And I have to tell you, I didn't see oral or maxillofacial radiology coming, so Shawneen, I'm a big fan of yours on social media, I follow you on Twitter, I love everything you do with teaching, uh, radiology. I just think you're a, you're a dynamo. I really do.

**Shawneen Gonzalez:** Well, thank you.

**Howard Farran:** But, let's open up to all the old guys – why is this a new specialty? And what made you become a new specialty member of this brand new specialty?

**Shawneen Gonzalez:** Well, I was really fortunate in a sense that when I went to dental school, I actually had three radiologists teach me. Um, most dental schools don't have three radiologists, and one of the guys actually, uh, Dr. Lars Hollander, he just turned 80 and he's still teaching, which is insane in my opinion, but you know, he's still sharp as a whip so that, I mean, that's awesome for him there. Uh, when I was in dental school, I just did a little research that involved me being a radiology

clinic. I just had a really fun time in there where I would ask a lot of questions like, you know, what's this, what's this, what's this, and after about like two weeks or so, they turned it around on me when I was doing my research, and they started quizzing me on all the questions, and then my, Dr. Hollander, he's got some crazy, crazy stories, like I remember one time he comes, he looks at these radiographs, hasn't even seen the patient, hasn't seen their name, doesn't know anything about them, and he's like, he looks at them, does a little bit with a student, and then he goes off, he says, I want to talk to your patient. Goes off to the patient and goes, Do you have a history of kidney stones? And the patient's like, Why yes, I do, and I was just like, I thought it was so cool, like the mystery aspect of learning about a patient off of just imaging, without actually having the chance to meet them first. So, it's like a big mystery to me. And so after he saw my interest, he's like, There's a specialty for you if you're interested. Kind of just kept nurturing it every time there was a weird case in dental school, Hey, why don't you come check this out, and so after about a year or so, I was like, I think I want to go into this and be in the education world where I get to see a lot of weird, crazy stuff and challenge myself every day.

**Howard Farran:** Well, that is, that is a beautiful story. Now, that's you, but why did the American Dental Association...

**Shawneen Gonzalez:** Yes.

**Howard Farran:** ...um, I mean, because they've been requested for a specialty for implantology, which I...

**Shawneen Gonzalez:** Yes.

**Howard Farran:** ...thought that would have been the next one, and then out of nowhere comes oral radiology.

**Shawneen Gonzalez:** Well, radiology, their, the specialty of oral radiology actually has been around for quite some time. The academy was officially formed like back in the '40s and the '50s, and the reason I think that they finally were pushing more so in the '80s and '90s to become a specialty is the rise of 3D imaging. CT imaging was coming on the scene, it was really picking up in medicine, but people were finally starting to realize that we can use this in dentistry. And this is before cone beam CT even came to be. But, they realized that with these advanced imaging, there really wasn't anybody who was trained to not only understand how the imaging works, but also understand how to interpret these images, besides beyond say the pathologists who understand obviously quite a bit as well about radiology, but they also have the histology aspect they focus more on because they have histopathological slides. So, they pushed primarily for those additional imaging, but also for the teaching aspect for students, to make sure the new generation of dentists coming out have a really solid radiology foundation so that they can be ready for the next thing that's coming in dentistry.

**Howard Farran:** It really is, uh, the ultimate non-invasive surgery, isn't it? I mean...

**Shawneen Gonzalez:** Yes it is, that is true.

**Howard Farran:** It is truly amazing, and I thought I had a, um, the most incredible, um, training and, um, anatomy and physiology with Dr. Bernard Butterworth at UKMC. I mean, he was a master, and I saw my first CBCT and I never felt so humbled in my life. I mean, I didn't know

what anything was. And I was looking at all that and, and just yesterday, Dr. Glass and I were both looking, and here I'm 52, he's 56, we're both sharp guys, and we, there was something in there and we were looking at that, we didn't have any idea what it was. Um, so tell me, so how prevalent is CBCTs? And by the way, someone earlier said that the, uh, the CBCT really isn't even the correct name for what we're using it in dentistry, that cone beam CT, that like when we buy, uh, I bought a Carestream, but that's really not even technically a CBCT, is that correct, in your view?

**Shawneen Gonzalez:** Um, well, the cone beam CT is named a cone beam CT because it all has to do with how the image is captured. So, in medical radiology, the CTs, like if you would go to a hospital and get a CT, a computed tomography scan, it's made with radiation in the shape of a fan, so you get all these different slices and they're fans of radiation that image you. The cone beam CT is named because the shape of the radiation is in the shape of a cone. So like a traffic cone that you'd see on the road, you drive around those big orange cones, that's the shape of where the radiation comes out of the x-ray source, and it's computed tomography because we're using x-rays and it's going to be 3D imaging, so they can compile them all together to make it a cone beam computed tomography. And currently, everything in dental right now that has 3D imaging capabilities falls under cone beam, um, computed tomography, but yes, there are a few machines that are not necessarily true cones of radiation, which might be why they're not truly saying that it is CBCT unit under that definition.

**Howard Farran:** Um, is it, um, I mean, obviously when we say to our patients that we're going to use a CBCT, I mean, that's Latin, Greek, that makes no sense, is it just, um, do you think it should, could be just

called to the patients 3D – this is our new 3D x-ray machine...uh, we used to have 2D, because everybody understands a 2D movie at the big screen and the you put on your 3D glasses. Is calling it 3D, um, would that be appropriate?

**Shawneen Gonzalez:** I think to simplify to patients, yes, using the term 3D is more than acceptable. Also, maybe correlating it how it relates to a hospital CT, saying that it's similar to that, but a lot less radiation dose because we're not worried about soft tissues, we're looking at just the bone and the teeth.

**Howard Farran:** So, when you say a hospital CT, you mean CAT scan?

**Shawneen Gonzalez:** Yes, CAT scan is the old term that has...a lot of people are still familiar with for a CT, which is computed tomography, some people, yes, will still call it a CAT scan though.

**Howard Farran:** So that's where CAT scan comes from – CT, computed tomography?

**Shawneen Gonzalez:** Yes.

**Howard Farran:** Okay, very good. Um, you probably think I'm old, senile, and have dementia.

**Shawneen Gonzalez:** Nope. No, not at all.

**Howard Farran:** Okay, so how, um, so how many... there's 150,000 dentists in America, uh 120,000 general dentists, 30,000 specialists – how pervasive is 3D now, um, in dentistry? I mean, do you think there's 10,000 units, 20,000 units of the nine specialties, has it entered, uh, more in some specialties than other or, where is this hot and where is this not, and as of today?

**Shawneen Gonzalez:** Well, for starters, I think at this point, finally, I know that sounds like it'd take a little while, all the schools should at least have one cone beam CT unit, which is obviously very good. Schools are supposed to be ahead of the game, but not always unfortunately. As for the general dental population, I don't have a number, but I can tell you a few specialties, for sure perio and, you know, implanting, implant sites, that's been really big for cone beam CT, as well as oral surgery. Oral surgery loves to see it, especially for those mandibular third molar extractions. They want to see if it's an impacted third molar, where is it in relation to that nerve canal, so that they don't cause any permanent damage to the patient, or to even see if it is even possible to extract those teeth. As, um, it is growing in the general dental population – a lot of those smaller, fixed small size cone beam CTs that just show maybe like five teeth in a quadrant, so it is growing a lot. Uh, I wish I had a, a sheer number, but any time we talk to any of the people who sell these things, they don't want to give us numbers for obvious reasons – it's their little secret, so...

**Howard Farran:** And, or, and as...are any of these working well enough for an endodontist where he can just say, okay, is this failing because it's a fractured root on like, say, a maxillary molar or...any of these machines good enough for that, in your opinion?

**Shawneen Gonzalez:** There are machines out there that are definitely capable of it. When it comes to endo, the thing that they need to really be aware of is the boxal size, the resolution size of your scan, and so some of the machines aren't capable of actually getting down to this, but what they AAE, the American Association of Endodontist, and my academy, AAOMR, American Academy of Oral and Maxillofacial Radiology, they did a joint position paper and said that for endodontic

purposes, if you're looking for a root canal fractures, if you're looking for missed canals, you want at least a .2 mm boxal size, or resolution slice or smaller, and there are several machines now on the market that do provide that, but realistically for endo, the smallest you can go, the better. So, for example, there are some out on the market that are .09 mm, and that would be ideal for an endodontic purpose to evaluate a tooth.

**Howard Farran:** Do you know off the top of your head if my Carestream was on that list?

**Shawneen Gonzalez:** Carestream does have the .09 actually...

**Howard Farran:** Right one.

**Shawneen Gonzalez:** ...it depends on what number of Carestream you have. Like the 9000, there's the 9300, and I think there's, is there a 9500 on a Carestream? The 9300 I know for a fact does have .09 mm. They, um, on the Carestream, just to give a heads up, they don't use mm, they're going to use microns, so they're going to say 90 microns instead of .09, but it's the same thing.

**Howard Farran:** Can you email me that paper so I can attach it on a thread after your uh, podcast in case anybody wants to read that paper?

**Shawneen Gonzalez:** Oh yeah, I can definitely do that.

**Howard Farran:** You don't have to be in the Secret Society to read it or anything?

**Shawneen Gonzalez:** You know, I'm pretty sure you...I'm pretty sure you don't...actually, you know, that paper might be freely available on

the AAOMR.org website. They may actually have it under their joint publications, but I will definitely check out, if there first, and the secondly I'll check and see in that quad-O, quad-O now, uh, the journal to see if that...because that's where it was initially published.

**Howard Farran:** Okay, Shawneen, this is your hour, it's not mine. Um, I'm just honored that, um, like I said, I've been a big follower of yours on, uh, social media, Twitter, uh, I just think, I think you're an amazing person. Um, so let's start with, um, let's start with the night...I, I would assume about 90% of general dentists have not adopted this new technology yet.

**Shawneen Gonzalez:** Yes.

**Howard Farran:** So, I want to start off with, uh, um, what should a, what should a dentist be offering...he's practiced...she's practiced ten years, uh, she's got digital radiography, she has a pano machine, she has a SAF, um, these things are about a hundred grand, right?

**Shawneen Gonzalez:** Uh, the cone beam CT?

**Howard Farran:** Yeah.

**Shawneen Gonzalez:** Yeah, that's on the low end, but yes.

**Howard Farran:** Yeah, that's the low end. So, these could be a hundred to a hundred and fifty, right?

**Shawneen Gonzalez:** Yes, and actually...

**Howard Farran:** And um...so, so, so start with the big picture of, um, uh, first of all, your production, prediction in, um, why...what should we be thinking about whether we make this big decision; number two, is

this bleeding edge or leading edge, I mean, is it a now technology or a wait-and-see five or ten years, because, to be honest with dentistry, I mean, I've been out here for 27 years and I remember when I got out of school in '87, they came out with a \$50,000 yag laser, and like 1,000 dentists jumped on it, and then about five years later, everybody said, that was a bad idea. I didn't do anything with it. And now it's just a coat rack. Um, so air abrasion hit the market hard and about 5,000, 10,000 dentists bought it, and then after a year or so, everybody said, you know, that really makes a huge mess and I'm going back to a diamond burr or carbide burr, so, so tell us, Shawneen, is this bleeding edge or leading edge, and if 10%, if we assume 10% of the dentists have it, uh, now, in ten years, what percent do you think will have it? Do you think it will be 20, 30, 40? Talk about that.

**Shawneen Gonzalez:** Okay, um, well first of all, the first question that any \_\_\_\_\_ has asked, some general dentists specialists, if you're considering purchasing a cone beam CT, obviously the cost is very expensive. Um, one thing I'm not a fan of that a lot of the sales reps will do when they try to push these is they'll say, Oh, well you only need to do maybe 15-20 scans a month, and somebody will think, Oh, okay, that's not bad. But, you have to look at your current population and go, how many scans would I realistically need right now anyways? I mean, if I only need one or two a month, where am I going to find my other potentially 18 scans a month, in the sense of am I going to start pushing unnecessary radiation on patients or am I going to market this out to other people? So, I don't, I'm not a fan of that kind of sales marketing tactic, so definitely ask yourself how often am I doing scans? I mean, is this just a once a month type of thing? If so, maybe there's another place to get your imaging done. If this is something like almost every

day you're like, Man, I really wish I had this in my office, then you might want to seriously consider this is something I really need to do. I miss...obviously, as a radiologist, I'm not keen on excess radiation to people just for the purpose of because you have essentially the biggest newest shiny toy. It's not meant to be used that way. We still need to be very, very careful with that and the radiation doses we're giving to our patients, especially any patient who is a child. So, those are definitely questions to ask. I mean, if you are starting as a general dentist to get into implants really heavy and you know that you're going to be needing to use a cone beam CT if you are going to say, I don't feel comfortable placing an implant without a cone beam CT, you know, maybe a cone beam CT is right for your office then. So, you've got to ask yourself a lot of questions of how often are you going to use this, you know, so you can help with the pain, but also to make sure your population is people who actually need this information to help, to help you out. And when you have the cone beam CT though, then you also need to be doing lots of \_\_\_\_\_ CE to stay on top of everything, not just you, your entire office, to make sure that you guys are keeping your radiation doses low and using the machine to its best functionality for your patients. You want to improve their oral health, not just get a scan to see if there's something going on. There should be a reason for it. So, as for bleeding edge, this is the thing right now or if everybody's going to wait five years, um, cone beam CTs have actually been around since...well, they were discovered back in 1997, came into the U.S. in the early 2000s, I'd say about probably between 2005-2008 is kind of when they really started to skyrocket on the market and when all the schools finally were starting to get their units. At this point, I would say it's starting to become, it's not standard appear, it won't go there –

that's a legal term, I'm going to stay out of that, but it is starting to become more common day imaging for certain procedures, implants, those third molar extractions, uh, bony lesions to determine where they're at, to get a biopsy or to remove those as well. I think if you wait five years, you're going to see a lot more offices have them. If we go with that assumption of, say, 10% right now, I'd say probably be safe in the next 10 years to say that maybe we might double in ten years and add 20% of offices will have them, maybe due to improved image quality, but also because if there's more on the market, maybe the price will go down a little bit, making it a little bit more accessible for not only the patients, but also then for the office to buy it and then provide it to their patients. There's always going to be new imaging coming down the road. I know right now people are really looking at MRI. MRI machines cost about a million dollars, so there's just no way that's coming into dentistry as in a general dentist buying any of those anytime soon, and that'd probably be more just going off to a hospital, but for the time being, I think cone beam CT is going to keep coming in. It's not to replace 2D imaging – we still need 2D imaging right now for our bioradiographs, but it will become more standard.

**Howard Farran:** Who gets credit in '97 for inventing this CBCT?

**Shawneen Gonzalez:** Uh, the very first one that came out on the market was, it was in Italy, and it was the NewTom – that was the very first one that ever came out on the market. It looks like a CT.

**Howard Farran:** Are you saying Newton, like Sir Isaac Newton?

**Shawneen Gonzalez:** No, NewTom, like the word new, N-e-w, and then its capital T-o-m.

**Howard Farran:** Huh.

**Shawneen Gonzalez:** NewTom, yep. That was the first.

**Howard Farran:** They brought us pizza, lasagna, and CBCT, huh?

**Shawneen Gonzalez:** That they did, yep.

**Howard Farran:** What a great country. I love that country. Um, I want to start with, uh, um, um, who's the father of medicine Hippocrates, the Hippocratic Oath, first do no harm.

**Shawneen Gonzalez:** Yes.

**Howard Farran:** Um, so talk about the, um, I always think back in my day, the thing they scared us about the most was exposure to the thyroid. Is thyroid still the most sensitive, um, area we radiate in dentistry, and will you talk about the thyroid collar and, and how, um, it's not being really used with CBCT – will you talk about that for a little bit?

**Shawneen Gonzalez:** Okay, so for...obviously yes, I'm not a fan of radiating people just to radiate them for any reason whatsoever. Thyroid, yes, it is going to be the closest radiation-sensitive organ that we have. I mean, it's right just there in the neck, right next to the mandible. So, for that reason, you are supposed to be very careful. They using a thyroid collar on a cone beam CT is, um, actually quite a heated debate. I was just at my radiology meeting a few weeks ago, and you're going to find papers out there on both sides. You're going to find some papers out there that say you must put a thyroid collar on because it's going to reduce the radiation dose to the thyroid. You're going to find other papers that are going to say no thyroid collar

whatsoever because if you capture even a little bit of that thyroid collar in your field of view, your scan, you're going to decrease your actual image quality. So, it's kind of interesting in that sense. Uh, one way that will help is, for starters, if you have a machine that can do different sizes of scan size, choose already the smallest scan size that you need to capture the area that you're looking at instead of just, say, doing the big one and doing the entire head every time. Also, one way to think about thyroid – kids, they're going to be by far the most sensitive. So, if you're ever imaging a kid for any reason, that thyroid collar should always be on. They're still growing, that thyroid is just extremely sensitive. I'm not saying, as adults, you should totally ignore still be putting the thyroid collar on, you just have to be aware, is it going to be in your field, your scan, or is it not. So, if it's not going to be in your scan, throw it on. If you can somehow throw it on, but maybe say tuck the sides down right by the angle of the mandible to help so it won't be in your field of view, that's great. Any protection you can give to those organs is always a good thing.

**Howard Farran:** Huh, and I wonder why the thyroid would be more sensitive to radiation as opposed to the brain, the pituitary, all the glands in your head. I wonder why that one's more sensitive.

**Shawneen Gonzalez:** Um, you know, the brain is still very sensitive to radiation, but it takes much higher doses to make any permanent damage to your neurons in your brain versus the thyroid needs a lower dose of radiation to cause any damage, and that's why it's just one of those sensitive organs like the gonads and blood marrow cells, all those kinds of situation. They all kind of got clumped together due to all the previous research where people were irradiated, and then they saw what types of disease, unfortunately, that they were cropping up with.

**Howard Farran:** Huh, I'm surprised my staff hasn't volunteered me to be studied on that disease. And uh, so, um, I have to tell you that, um, being on Dental Town all day every day, um, I do have to tell you one positive note on CBCT – you don't ever see buyer's remorse. You don't...um, there was a lot of buyer's remorse with, uh, \$50,000 lasers 25 years ago or air abrasions, I mean, I can't think of one post on Dental Town where someone said...uh, to me, it's kind of like, um, um, not to be funny, but it's kind of like once you see a CBCT, it's not like you want to go back to a pano.

**Shawneen Gonzalez:** (Laughs)

**Howard Farran:** I mean, because, you know, not many panos you look at and just say, That is just too much information, but almost every CBCT everyone looks at, it's like, Oh my God, you get...I mean, you've just got to be humble, say, That is way over my head. So, are you, um, so there's what, what is your membership now up to, specialties? You passed 200 oral and maxillofacial board-certified specialists, didn't you?

**Shawneen Gonzalez:** We, um, I think...well, we...board-certified active, and I say active as in, um, not retired, still actively either teaching or working in private practice is actually about 140 to 150 right now. Um, actual members of our academy who may not be board-certified in a sense that whether they were trained here in the U.S. or in a foreign country and just either didn't take the test for, you know, whatever reason, because there are people, we do have a few people like that – yes, we are closer, over 200 members in that sense, and that includes the, uh, diplomats as well.

**Howard Farran:** Since, since the Italians invented it, are they exempt from being called a foreign country? Are they..

**Shawneen Gonzalez:** No. (Laughs)

**Howard Farran:** Are they the base country now?

**Shawneen Gonzalez:** No, they're not the base country.

**Howard Farran:** But, uh, then maybe they should be. And uh...so, so, um, are you...I know you've accepted a new position in an Oregon dental school...

**Shawneen Gonzalez:** Yes.

**Howard Farran:** ...which is a, um, outstanding dental school, I've been there many times, uh, in fact, one of my favorite dentists in the world in Arizona, Kelly Bradley, is a graduate from that school. Do you know Kelly Bradley?

**Shawneen Gonzalez:** No, I do not know who that is.

**Howard Farran:** Yeah, she's in Bullhead City and, uh, one of the sharpest, uh, dentists I've ever met in my life, and she's from that school, but so, are um, obviously, um, if a dentist is going to be honest, uh...

**Shawneen Gonzalez:** Yes.

**Howard Farran:** At least nine times out of ten you're going to take a CBCT and see things you don't know what they are. Are you, yourself, can dentists send you an email...

**Shawneen Gonzalez:** Oh yes.

**Howard Farran:** If they bought a CBCT and they're like, Shawneen, what is that thing on the right? Um, are you doing that, and how does a dentist contact you?

**Shawneen Gonzalez:** Um, I've got two methods, kind of, that I offer to dentists. One is kind of like a quick look type thing when a dentist could take a screen shot or make a, like a JPEG image off of their imaging software and send it off to me and just give it a description, saying, Hey, just wanted a quick look – can you take a look at this? And so I can look at it, and it's called a quick look because I don't spend too much time. I obviously just look at like one or two images, and I'll, you know, give a little radiographic description of it and say, Either A- here's what it is, sometimes it's pretty obvious, other times I may say, This is suggestive of this and you might need, you know, to look at referring it out if you're wanting a biopsy and just, you know, talk it out with a dentist. The other option is that I set up, um, actual kit...I have a website where people can actually upload an entire Dicom data set to me, and then they send their referral in with me, as well, and then, with that, I will them download it on my side, provide a detailed radiology report, and then send it off to the dentist and talk with them again, answer any questions, but that way I'm not looking at just the area in question, I'm looking at everything. I mean, sinuses, we're looking at cranial skull base if it's captured, the cervical spine, airway, the neck, the other teeth that are on the scan that maybe somebody may have just been looking in one area and maybe kind of forgotten to look at everything on the scan, so it's just a nice, thorough look-through essentially is what the report is that I provide for offices that are interested.

**Howard Farran:** Yeah, and go over, go over that name – I was wondering, it's drgstoorthpicks.com. So...

**Shawneen Gonzalez:** Uh...yeah, that's my, that's my educational website, yeah. My one that I do the actual reports through is actually legacy3d.com, so just L-E-G-A-C-Y-3-D.com, and there's, um, a place

where you can do a file upload, it goes through a company I use the software called, well they changed their names...what are they...Hightail? It used to be called, you send it, it's called Hightail.com. It is HIPPA-compliant, so you are safe...

**Howard Farran:** Hitell...H-I-T-E-L-L.com?

**Shawneen Gonzalez:** Hightail is H-I-G-H and then tail, like a dog's tail, T-A-I-L.com. It's one of the few HIPPA-compliant kind of Dropbox software that is in existence right now.

**Howard Farran:** Okay, the dentists in Colorado are going to think of something else besides a dog jumping high.

**Shawneen Gonzalez:** (Laughs)

**Howard Farran:** Uh, so, and then, and then, then tell us all about your other website, Dr. G's toothpicks – tell us about that?

**Shawneen Gonzalez:** Yeah, \_\_\_\_\_ use...

**Howard Farran:** Yeah.

**Shawneen Gonzalez:** Yeah, my Dr. G's toothpicks, um, that was something that I got...

**Howard Farran:** Oh, Dr. Gs, oh, I got that. I was wondering what the S stood for. I didn't realize it'd be possessive.

**Shawneen Gonzalez:** Yes, it's like a Dr. G's toothpix and then the X is just kind of a fun play instead of a, for pix for x-rays, because that's, you know, I talk about radiation and do all the radiology stuff. I wanted something that was catchy, but also I was having the hardest time coming up with my Twitter handle, because Twitter has a limit of 15

characters, and my full name does not fit. So, I figured I'd go with something a little more creative.

**Howard Farran:** That, that is an interesting name, Shawneen. You know, when I first saw your name, I assumed you were American Indian.

**Shawneen Gonzalez:** Nope, uh, I am not, but yes, the Shawnee Indian tribe is very similar, I get that question a lot.

**Howard Farran:** Yeah, very interesting, and uh, but anyway, um, yeah, you're just, you're a pine...I mean, you just have two websites, Twitter, I mean, you're just...I mean, really, you're, a leap...I love it when you, uh, send out a, um, an x-ray and say, What is this, and you start, um, seeing how everybody starts thinking and, um...

**Shawneen Gonzalez:** Yeah.

**Howard Farran:** ...and I'm sure most people are too shy to make a guess. And uh, I would...um, it's just amazing. Okay, so we talked about that. So, so tell us...well, let's go back to the general dentist, um, looking at the CBCT, um, you...obviously implants, um...

**Shawneen Gonzalez:** Yes.

**Howard Farran:** ...obviously wisdom teeth, um...

**Shawneen Gonzalez:** Yes.

**Howard Farran:** ...roots around \_\_\_\_\_ and all that's a given.

**Shawneen Gonzalez:** Yep.

**Howard Farran:** Um, endo for missed canals since...

**Shawneen Gonzalez:** Yes.

**Howard Farran:** ...missed canals seems to be the number one cause of, uh, of root canal failure according to some of my endodontist friends, but why did you say perio?

**Shawneen Gonzalez:** Um, well, for perio, it's primarily for implants, and with the implants they want to know, first of all, quantity of bone, as, you know, where is the canal, especially in the mandible, but also in the maxilla, if they're going to be doing a sinus lift, they want to be able to image the entire sinus so they can know how much they can lift the sinus and pack on how much, you know, bone graft material they can pack in there without occluding the sinus opening that drains in the nasal cavity.

**Howard Farran:** Okay, very good, and also, um, we have to talk with patients all day long, and uh, I love the internet. Um, I have to tell you honestly, I'm in Phoenix, Arizona, uh, it's a very middle class neighborhood, 25% of my patients speak Spanish, um, it's, it's very, it's not Scottsdale, it's not, uh Paradise Valley, it's, it's a very family practice, and um, I have to tell you that, you know, three times a day in conversations, at least, a patient will say, Well, I was reading on the internet, blah, blah, blah, blah, blah, and I like it – I'd much rather have that than practice in, uh, 1900 when four out of five Americans couldn't read or write, I think that would have been, um...

**Shawneen Gonzalez:** Yes.

**Howard Farran:** ...less fulfilling, you know, to just have some person come in there and be completely, um, illiterate, but um, I love that, but how do you, could you give us dentists and hygienists and assistants

some verbal language about people who just refuse x-rays because they don't want any radiation, when at least, in my office, we're back here thinking in our head, Dude, you live in the desert, you know, if you have these views, why don't you move to Alaska or Antarctica or Buenos Aires, I mean, you shouldn't, you know...why, how can you say that when you live in a land that's so much radiation, there's only like cactus and scorpions running around, and, and...is...and is for me to even think that, is that even a correct way to think, or is dental radiation so different than...I mean, when you walk outside for six months a year in Arizona, that sun just beats you. I mean, it's like wow, I mean, you can feel the ray.

**Shawneen Gonzalez:** Yes.

**Howard Farran:** So, is there any language, any...and anything, you know, aimed at like just, you know, a 6<sup>th</sup> grade, high school...not, not insulting the patients that they're like a 6<sup>th</sup> grader...

**Shawneen Gonzalez:** Yes.

**Howard Farran:** ...but, from a non-technical point of view, some verbal conversations you can give us to talk to our patients who are refusing x-rays, because of radiation.

**Shawneen Gonzalez:** Well...

**Howard Farran:** And obviously a high-educated mother doesn't want her baby irradiated, I mean, you've got to give her credit for that.

**Shawneen Gonzalez:** Yes, and I mean, it's good I think that patients are aware, it's always a good thing for patients to be aware and kind of just want to make sure that there's the, you know, the do-no-harm thing

again. Well, one thing to start with, that every office should start with that will help, is looking at the ADA and the FDA, uh, prescription for ordering radiographs. They came out with guidelines back – and they are guidelines, it's not, you know, set in stone or anything, came out with guidelines back in 2004, they updated them just in 2012, and it gives you just a really simplistic, one-page table that says, based on your type of patient, is this a new patient, is this a recall patient, um, what type of dentition do they have, is it mixed, is it permanent, is it all primary, and then you also look at the caries rate, and you can kind of follow the table across, and determine how often should we, first of all, be getting radiographs on a patient. So, if you were to have an adult come in your office, based on this...

**Howard Farran:** Okay, can you email me that, too, so I'll attach that?

**Shawneen Gonzalez:** Yeah.

**Howard Farran:** Okay, because what I like doing on my, uh, podcasts is we, we always do a transcript, so if you're out there riding your bike right now or mowing your yard or riding a horse...

**Shawneen Gonzalez:** Yes.

**Howard Farran:** ...you don't have to stop to write all this down, so you'll email us that, too.

**Shawneen Gonzalez:** Yes, yep, I can definitely email that to you. That's one thing that I...this is something I like to get out to as many people as possible. So, for this, just...I'll give you an example. Say you've got an adult patient coming in the door who is really adamant, no radiographs, you look at their chart, they are, got great oral hygiene, they have a very low caries risk, you haven't had to really do anything in their

mouth, it's pretty much they come in, they get their teeth cleaned, you do a look, and you're like, wow, everything looks awesome. According to the guidelines, you can go anywhere from 18 months to 36 months before doing bitewing radiographs the next time the patient needs to come in. Now, I realize that's essentially going anywhere from a year and half to three years, which is, you know, you have to take in your own personal professional judgment into this, as well, but some patients maybe like to hear that they don't need it every six months, every year or so, if they're keeping their mouth really clean. So, maybe it could be motivation for a few people – hey, let's take care of your teeth, let's get these caries rate down, we'll need less radiographs. Obviously those who have a high caries rate are going to fall more in that six to 12 month, um, process where they're going to need radiographs just because they keep cropping up with new stuff every time they come in. So, that's one thing to start off with. If you're already using that, that will help decrease your radiation to the patients. Like you were saying though, there's radiation everywhere. We can't avoid it. It's outside, it's, you know, it's in our house, it's when we fly, just going up at a higher elevation, or for you guys in Arizona, I mean, Flagstaff is pretty higher elevation, too, so even just going to visit Flagstaff for a little while or if you lived out in that area, I mean, that higher elevation, you're getting more radiation there than you would down at sea level. So, you could try to explain that to them. Sometimes with people who get on the internet, one thing that might help – maybe, you've got to be very careful with this one, is if they do a radiation dose calculator, so if they type that in to, say, Google, Yahoo, whatever their search engine is, there will be a lot of different websites out there. There's one, I think it's the NRC.gov website, has a radiation

calculator where you can choose where you live. It's for those in the U.S., where you live in the U.S., how many times you travel, whether or not you have then, say, false teeth, whether you have a pacemaker, smoke detectors in the house, all those little things give off radiation, and then at the end, it gives you a pretty little pie chart of how much radiation each year you get based on the different things. And radon is the number one for everyone here in the U.S., most of our background radiation. So, I mean, those are other ways that you can kind of try to explain that radiation is everywhere, we can't control it. Um, obviously yes, the radiation we get from the radon and all those other stuff in our house is a little different than the radiation that we get from dentistry, but again, if you're following those guidelines, that will help keep it down, as well as making sure your technicians are trained, so that you're doing less retakes, always a good thing, too. So, if they're really trained in the sense that you would need a perioapical radiograph and they can get it on that first shot instead of needing three or four, that's going to help also.

**Howard Farran:** Is there any, um, apples to apples comparisons of, uh, a set of bitewings or a full mouth...so, I mean, you've...back in the day, they say, you know, bitewings is equivalent to, um, being outside in the sun for 10 minutes. Is that a fair statement or, is there anything...

**Shawneen Gonzalez:** Um, it's...

**Howard Farran:** Or is it too...

**Shawneen Gonzalez:** It's kind of... it's hard...

**Howard Farran:** Yeah.

**Shawneen Gonzalez:** ...and I say it's hard because of the sense that it kind of depends on where you live. So, when I was in Lincoln, Nebraska, and this also where it gets a little tricky, in Lincoln, Nebraska, at the dental school, we were using Phosphor-plate system and we had rectangular columnation. So we didn't have a round cone, we had a rectangular-shaped cone. And so using the Phosphor-plates with the rectangular columnation at about 1,100 elevation, 1,100 feet above sea level, a set of four bitewing radiographs was about a half day background radiation. So, you have to look at, uh, what's your image receptor, are you using film, S-speed, D-speed, are you using digital, are you using sensors, phosphor-plates? You need to also look at then...

**Howard Farran:** You said bitewings equaled a half day's exposure?

**Shawneen Gonzalez:** In Lincoln, Nebraska, for the phosphor-plate system...

**Howard Farran:** Yeah.

**Shawneen Gonzalez:** ...with a rectangular columnation. So...

**Howard Farran:** Wow.

**Shawneen Gonzalez:** ...there's like...there's kind of...it depends on your elevation and where you live at, depends on your, for your actual x-ray, and is it a round cone, rectangular, are you columnating it down to rectangular, and then also, like I said, are you using film, are you using digital, and kind of your exposure time. We've obviously, in the last 20 years, have decreased our radiation exposures to patients immensely, but a lot of our patients, especially for those who've been going to the dentist for a long time, they don't realize this, and they're not going to probably comprehend that we're down from, what used to be a second

exposure down to a tenth of a second exposure. And they wouldn't realize that sitting in the chair, they just feel the uncomfortable apparatus kind of in their mouth and they just know that you're getting your image you need to do your work.

**Howard Farran:** And, I want to, um, go off into a completely different area, but one that really, um, bothers the general dentists, and that is, um, back, you know, back in the day, it seemed like so many of the materials did not show up on an x-ray. So, for a general dentist taking a bitewing, uh, the filling, you know, 25, 30 years ago, half the time you didn't know, is that a base, is that a liner, is that decay...um, are we doing, as a profession, a lot better where all the man-made cements and bases and liners or are carrying something so it shows up on an x-ray, or what is your thoughts on that, I mean...?

**Shawneen Gonzalez:** Um, most of the liners and the cement I've seen, yes, now are very radiopaque, in the sense that you can tell it is something man-made, it does not look like anything, it's more radiopaque than the enamel, the bone, all that other stuff, so it's evident that this is something that a person, a human being stuck in the mouth. There is a weird thing, though, with the composites, um, composites are always tricky, that you start out, used to be radiolucent, and then they went radiopaque, and for some reason, I'm not quite sure what the manufacturers are thinking on this one, they've started making more of the composites to have a very, very similar radiopacity to enamel. So, when I'm teaching the students, a lot of times, I mean, I know what the DEJ of a tooth looks like on a radiograph, I have the experience of looking at more radiographs than they do, but when they're starting off, if it's a smaller, say occlusal restoration, they don't catch that that's actually a composite on the radiograph, and

sometimes because they're still new, when they look in the mouth initially, they don't also see it because they're still trying to figure out the normal anatomy of the tooth. So, that's one that I'm not quite sure why they're trying to mimic the radiopaque...

**Howard Farran:** I, It confuses the heck out of me. I mean, the main thing that confused me with, um, composite makers is why there's nothing in there antibacterial. I mean, I was, I always viewed dentistry as a biological problem. It seems like all of the composite manufacturers always view it as a mechanical engineering structural engineering problem. They, they want a certain material of wear and strength, and I'm like, this is going to fail from an infection of recurrent decay underneath it. It's not going to break in half. That's not the problem

**Shawneen Gonzalez:** Yes.

**Howard Farran:** The problem is antibacterial, and they always want to do wear and strength and megapascal and all that stuff. But, yeah, I think it's \_\_\_\_\_. Um, is it safe for you to say to dentists, um, when we're not sure? Um, you know, a lot of times with these composites, you see...an MOD composite...

**Shawneen Gonzalez:** Uh-huh.

**Howard Farran:** And sometimes you see a radiolucency underneath, um, but if it's just fairly uniforming, I, I always think of streptococcus mutans not having any order to its growth, I just see it as like a random, chaotic infection. So, if it looks fairly linear, is that always a good rule of thumb that it's probably not...

**Shawneen Gonzalez:** That's exactly what I teach my students, exactly. If you see a radiolucent area underneath a restoration, a composite restoration especially, and it's got a nice, sharp line on it, really well defined, that's going to be more of a man-made cut to the tooth. You're right, caries, when it grows, it just goes to town. It's going to go all over. It's going to be more diffuse radiolucent area, not a nice, sharp edge. They don't...the bacteria doesn't make in rows down through the tooth like that whatsoever.

**Howard Farran:** And, also back in the day, um, I was formally taught that what we see on a bitewing is actually only 40% of the size of the lesion. Twenty-seven years later, is that still a good number or, will you talk about that?

**Shawneen Gonzalez:** I would have to say that number pretty much actually still stands true, especially with our faster speed film, so like F-speed film versus even the digital imaging because we're using less radiation, the size of the caries that we can see on a radiograph, yes, is always smaller than in the mouth, and I'd say about 40-50% smaller than what you're going to see. So, a lot of what people are going with digital imaging is if it's half way through the enamel that means that when you get in there and you go and remove it, there's a good chance you're already touching the DEJ.

**Howard Farran:** Yeah, one thing I've done with my, uh, long term, uh, hygienist, and that is whenever we would disagree when they would say, I'd say that's a DO on #3, and she's day, I'd put a watch, so I'd always put a, a note on the chart, so when that patient, when I was doing that, as soon as I drilled into that and then I would go get the

hygienist, and I'd make her sit down and spoon x-rayed her, and she'd go back to the x-ray and think, wow.

**Shawneen Gonzalez:** Yeah.

**Howard Farran:** And I'd always try to teach that point because it's, uh, and a lot of that stuff you have to associate the vision of the radiograph with the show/touch/feel of drilling on that tooth.

**Shawneen Gonzalez:** Yes.

**Howard Farran:** Um, so what else, um, did you want to talk about? Um, I, I wanted to ask you if there's, uh, we always see advertisements for other technologies, uh, for caries indication.

**Shawneen Gonzalez:** Yes.

**Howard Farran:** Um, and there's lots of companies. I mean, and over the years, just like, some have been lights, some have been wands, some have been...

**Shawneen Gonzalez:** Yeah.

**Howard Farran:** ...dyes and stains...is there any other...if, if I took away \_\_\_\_\_ radiograph machine...

**Shawneen Gonzalez:** Yes.

**Howard Farran:** ...and took out, take out all those radiation \_\_\_\_\_, are there any other technologies that, um, that have your attention or you think, um...are here now, leading edge not bleeding edge?

**Shawneen Gonzalez:** You know, when it comes to all the new stuff, I'm, my interest is definitely peaked, but I haven't seen enough to make me go, Yeah, that's definitely what I want to, say, even be telling the

students about. Because a lot of times I'll be talking to the students, they'll ask me, say if I go off to like the ADA meeting which I know was just last week, I couldn't make it this year, but they'll even ask me, you know, or I'll ask them, have you guys been taught about this or this and that, so right now, I've got to say, when it comes down to it, the bright light, that really is the ideal. The only one I've seen that is effective, I'm still waiting for a little bit more information on the other guys that are coming out yet as to whether I'm sold on, yes, I want to be telling students, or any practitioners. I mean, when I go off to CE courses, you know, this is an interesting thing, you definitely want to be looking into it.

**Howard Farran:** I, I, um, I like the bright light on flat, thin incisors...

**Shawneen Gonzalez:** And anterior teeth.

**Howard Farran:** ...but nothing in the molars...

**Shawneen Gonzalez:** No, that, that's the problem. It works for the anterior teeth, I agree, the posterior teeth, you're...they're just a little too thick there. (Laughs)

**Howard Farran:** And, and in my office, nine out of ten interproximal cavities are going to be on the molars and premolars, and...

**Shawneen Gonzalez:** Exactly, and that's what the problem is.

**Howard Farran:** ...and by the time you have interproximals on the anteriors, you pretty much are doing an MOD on every tooth in the mouth anyway. I mean, they've got a huge, uh, dietary problem.

**Shawneen Gonzalez:** That's true.

**Howard Farran:** Um, so um, so let's go back to this dentist, um, I'm a...let's say it's a general dentist. Um, I would think 80% of the general dentists do not place implants.

**Shawneen Gonzalez:** Yes.

**Howard Farran:** Um, I would think 80% of the general dentists do not pull impacted wisdom teeth.

**Shawneen Gonzalez:** Yes.

**Howard Farran:** So, if you were a general dentist and you did not, uh, place implants and you don't want to place implants, there's a lot of dentists that they just say, Shawneen, um, you know, I really don't like to do the blood and guts surgery stuff.

**Shawneen Gonzalez:** Yes.

**Howard Farran:** I really don't want to place an implant, I really don't want to take an impacted wisdom tooth, um, if you...if you were that dentist, and this machine was six-figures, um, so I need to buy that machine. I mean, can I be a good dentist without spending \$100,000 on a CBCT if I don't place implants or pull impacted wisdom teeth? Can I still be a high-tech, high quality dentist?

**Shawneen Gonzalez:** I think you can, but I think that you would also want to have an avenue somewhere that, should you find a case where you have some ptosis that you want more information. Say you see something on your 2D images on your perioradiograph, your pantomograph or something, you see something and you're like, I don't feel comfortable with this, this looks like there might be something going on, you'd really want to be able to have that avenue to say, here,

I'm going to refer you off to, say, if you're next to, you're near a dental school, you know, I'm going to refer you off to the dental school and get some additional imaging because I just want to get a better look at this, and it may turn out to be it's just their normal bone pattern that's mimicking disease, which happens, or it may turn out to be something more serious. But, the point is is that you were able to at least help them take the path necessary so that the person who then does go in there and remove it will have all the necessary information to do the best job possible, causing the least amount of harm to that patient.

**Howard Farran:** And if you've got that x-ray, um, be more specific on your website, because I know a lot of dentists, um, they're just not that...a lot of them, especially my age, are not that tech savvy, how difficult is it to upload one of these to your website? I mean, what all is involved?

**Shawneen Gonzalez:** Um, well...

**Howard Farran:** Are you, are you going to download that x-ray on your machine to like a, uh, like a thumb drive, and then, uh, you know, how is he going to get that...how is he going to get that information out of his CBCT, and into the internet, into your website?

**Shawneen Gonzalez:** Okay, so what they do is, first of all, on the cone beam CT, there's usually...now, each machine and software is a little different, but there's usually two methods you can export the data. One is to export it and burn it with a viewer, which is something that, say, if you're sending it off to another office to be viewed at or the patient wanted a copy of it. Another is to export it in Dicom, which is D-I-C-O-M format, and so what you would do is you would actually export it in Dicom format, maybe onto your desktop of that computer or into a

folder probably is what I would recommend because if you do multifile, there will be like anywhere from 300-500 files, so you'd put a file folder with that patient's name, and then for, on the website, the legacy3d.com, you go down on the front page to the file transfer, and you click there, and then you actually can just grab that folder and drag it right over to the box when that page opens, and then, in your email, you put your email in, and you put any information you want to specifically be looked at on that report in the subject area and down in the actual area of the email, and then you'd hit send. It will upload – just to give you a heads up, those are big files, it may take anywhere from five to ten minutes depending on your internet speed and how fast your computer is, but then that's really it. It's really a click and a drag, fill out your information, and then hit submit.

**Howard Farran:** Um, yeah, I notice everybody who talks about the Dicom file, I, I didn't hear, get the name of the first file, but the second one, the Dicom, that seems to be what everyone is using.

**Shawneen Gonzalez:** Well, Dicom is actually something that medicine came up with. I can't remember when they did, but the problem was is that all of the companies were coming up with their own thing. So, like Carestream would have had Carestream only type images instead of, say, A JPEG. And so Cerona would have Cerona-only images and that could only be read by Cerona. So, Dicom was created so that any hospital at all pretty much in the world, not just the U.S., in the world, can transfer their images, and they can be viewed at that hospital. Dentistry, uh, with cone beam CT, we were a little slow to start off, everybody had these capabilities, but they're finally starting to all have now, the Dicom format because this is what we should be using, because it has all the patient information, everything like that, so you

must be very careful, obviously HIPPA-wise, when you submit these images anywhere, but it's just the only way to ensure the image is seen initially as how you were seeing it, too.

**Howard Farran:** Yeah, we, we see that in, uh, CB, in uh, CAD-CAM, too, where, you know, they're closed for proprietary systems and then there's open formats and, uh, laboratories have to deal with that a lot. Um...

**Shawneen Gonzalez:** Exactly.

**Howard Farran:** Um...so, um, back to the, um...back to the, uh, forgot, uh...Oh, I remember what I was going to ask. What, what is the turnaround time? Like, if I have a patient and I get that CBCT, I upload it to you and I say, Will you look at this, what kind of turnaround time is he looking at?

**Shawneen Gonzalez:** Um...

**Howard Farran:** Is that a week to 10 days, is that 38 hours, is that a month?

**Shawneen Gonzalez:** Um, five day...at the end, I'd say five business days, but it all kind of depends on how many other cases I have. I try to realistically do it within one to two business days is what I'm shooting for. Obviously the more cases I get, it's going to be a little bit more difficult to get that quicker turnaround, but I, I especially want to, but also if a dentist is saying this urgent, if they were to mark that and say urgent, can you please get this back to me as soon as possible, it might help them jump the pile so that I can try to get that one out maybe within more like a one-day turnaround.

**Howard Farran:** Wouldn't it be easier if you just made all your students read them for extra credit? (Laughs)

**Shawneen Gonzalez:** (Laughs) If only, except they don't know what the hell they're looking at, that's the problem.

**Howard Farran:** So, I, I want to also say that, um, being an older guy that, um, that you'd be surprised...you know, specialists would do anything to meet a general dentist because, um, number one, they, they're B to B – specialists make their money from, uh, mostly from, uh, other dentists.

**Shawneen Gonzalez:** Yes.

**Howard Farran:** Um, as opposed to dentists who are more B to C, business to consumers. So, we, dentists tend to market, uh, to patients, and dentists tend to market to other dentists, B to B, and I, I I, now granted, I'm in a very huge city, but I don't know a single oral surgeon, uh, that if you said, Can my assistant take over my patient Shawneen and take a CBCT, would you mind, um, they, they, everyone I know is like, Absolutely. And I'm a general dentist, and I have, um, probably about five general dentist friends who just pop in unannounced every once in a while because I have an open-door policy. It's like, yeah, because I actually feel better, I mean, if you spend \$100,000 on a Carestream machine, but you want it used a lot.

**Shawneen Gonzalez:** Yes.

**Howard Farran:** I mean, you don't want the thing gathering dust, so...and it's a great social thing. I've always thought the dentists who have the biggest social networks of other dentists always seem to be the happiest, most motivated, and the people who, um, are the most

withdrawn and the most introvert and the most keep all their problems inside, usually are the ones that, um, some day they just, you know, explode into thin air, and turn to being flat, so I think, um, I think if you're not sure if you need one of these things, start, start talking to a specialist. It's fun, it's social, uh, a lot of times they turn into your biking partners, your jogging partners, swimming partners, I mean, it's amazing how many, uh, orthodontists start a Lifetime Fitness and all that stuff and it's a fun time. Um, so, I've only got you for ten more minutes, um, what, what, what should we be talking about that I am not even smart enough to ask you?

**Shawneen Gonzalez:** Oh, geez, let's see. I mean, I go over lots and lots of fun stuff. Uh, there's lots of new stuff that is coming out there on the market that's obviously controversial. I'm going to be actually doing a CE course, let's see, in just a few weeks about the bitewing modality on pantomograph or panoramic machines, and just, it's a short and sweet CE, they do a series of, like just 30-minute talks and the audience gets a chance to kind of learn what's the hot topic essentially, and I know that's an especially hot topic right now because of insurance reimbursement, because offices have been buying these machines thinking this is awesome, I don't have to do bitewing radiographs anymore, I'll just use this one machine, I'll get my, my pantomograph or panoramic radiograph and then I'll just click the bitewing feature and I'll get my bitewing radiographs. But, that's an extraoral image, and according to the ADA codes, bitewing radiographs are intraoral images. So, they're submitting them to insurance and insurance is saying, No, we're not going to pay these. These are not bitewing radiographs. They actually have to be coded as an extraoral radiograph, and they may not actually have much of a reimbursement if any reimbursement for an

additional extraoral image. So, that's one thing that's kind of hot topic right now, that I know in California has recently been an issue for several people.

**Howard Farran:** Shawneen, how close are we before, you know, um, when I heard the, um, back in 2004 when Google was going public, uh, Sargie Bren, Larry Page, they were talking about their, their true passion was not search, that a business model, their true search...their true passion was artificial intelligence. How close are we to that leap where the CBCT or the radiograph runs through it and says, there's a cavity on enough areas demineralized on the mesial of #3 that that is a lesion. How close are we to that? Is that 10 years out, 20 years out, is that Star Wars stuff or is that around the corner?

**Shawneen Gonzalez:** Um, well, it's a mixture of right around the corner for some patients – I have to emphasize for some patients, but for other patients, I think we'd probably be another 10, 20 years, and it all comes down to existing restorations in a patient's mouth. You have a patient who's got any existing restorations, they've got amalgams, they've got even composites, they have had endodontic treatment, they have, you know, \_\_\_\_\_ hanging out there, those all cause artifacts, they cause streaking artifacts, and so because of that, we cannot really see the interproximal of teeth very well for small lesions. So you still have to rely on bitewing radiographs, they are going to be the bread and butter still for those patients. You have a patient – no restorations whatever, which we are trying to get more of those patients, but there are still more patients though that are going to have existing restorations, so if a patient has no restorations whatsoever, yes, sometimes – I'm not going to say all the time, but sometimes on a cone beam CT, you can catch those lesions in the enamel. But, we're

still...and that's where the ones that are just around the corner for. But, it's a catch of how many patients do you have that have zero existing restorations that would qualify, and at that point then, why are you doing a cone beam CT which is so much more radiation than say, bitewing radiographs, you know, that are probably...there'd have to be some other reason why you were doing the cone beam CT, because of the excess radiation still right now. So, some people, yes, other ways, we got about 10, 20 years until they can figure out how to get rid of that streak artifact which is a tricky, tricky thing to do. So, we're getting there, they're trying, but we're not there yet.

**Howard Farran:** I want to ask you another thing that's really flying around the internet and, um, bothering a lot of dentists over a lot of cities, and that is, um, you know, there's just, there's a website that just keeps getting hit about what, what do 99% of all cancer patients have in common – they've had a root canal. And it shows all these pictures about how there's still residual infection at the end. Of course, when you talk to endodontists, they're going to say, Well, you have...your body interfaces bacterial in your mouth and in your sinuses, in your eyes, your ears, downstairs, all, all these places, um, but I want to ask you specifically, um, when a dentist sees, uh, something at, um, a perioapical of a tooth...

**Shawneen Gonzalez:** Uh-huh.

**Howard Farran:** ...it's had a root canal, it was five, ten, twenty years ago...

**Shawneen Gonzalez:** Yes.

**Howard Farran:** The tooth's completely asymptomatic, but you see a little perioapical radiolucency. Does that, does that always say, That's a failed root canal and you need to retreat that, \_\_\_\_\_ retrofill, or could that be a radiographic lesion, scar tissue, uh, something else. Will you talk about that?

**Shawneen Gonzalez:** Um, it could be exactly the kind of options you said. It could be a failing root canal, which may still be asymptomatic because a lot of times even normal teeth that haven't been endodontically treated may have that radiolucent area at the apex and are still asymptomatic, they just haven't flaired up. There is also the, like you said, the fibrous scar. It just had fibrous healing instead of bone healing. Uh, the difference is really going to be on a fibrous scar, you should be able to see a pretty well-defined, kind of corticated radiopaque border around it, indicating that it hasn't changed. And also if you've been following it over time at all with, say, 2D imaging, you'll see the size stays exactly the same. If it's a failing endo and there is actually some bad stuff down in there, it's going to keep growing over time. So, it's one of those things, I guess, you know, that are symptomatic and you're, you don't see nothing, you say you had an endodontist just right next door, they take a look, they're not too concerned about it, they may say, Well, when they come back in six months, we'll do another periolitical radiograph or something and we will evaluate, has it changed, has it not changed, if the patient stays completely asymptomatic at that time. Those are always I grade little on the more tricky side, watching it to see if it grows versus also looking at just the edge of it, that radiolucent area.

**Howard Farran:** So, I only got you for two more minutes, is there any, any other, uh, any other areas you want to hit that I, uh, didn't ask?

**Shawneen Gonzalez:** Uh, not that I can think of, other than like you mentioned with the website, I'm always looking to see what other people, what other radiology topics people want me to post on. It's obviously primarily for my students, but it has caught on and I have a lot of people around the world now who are following my website. I do my little Find the Caries and Locate the Object for image shift practice for anybody out there, students and dentists alike, dental professionals, so I would just say if anybody's got some fun topics on radiology or topic in radiology that they want me to hit on, you know, shoot me a message on my website, the drgstoothpix or on Twitter, you know, that's the same – drgstoothpix, and let me know and I'll see what I can do.

**Howard Farran:** Well, I think the number one question every dentist in America has for you is that, now that you've left Nebraska, are you still going to be a patriotic, Big Red Football fan, or are you going to throw them under the bus for some lowlife Oregon team?

**Shawneen Gonzalez:** (Laughs) If I'm going to pick any college football team, I'm going to pick where I went to dental school, and that's going to be UW, and that's the Huskies. (Laughs)

**Howard Farran:** Ah, right on, right on. Well hey, uh, I love your energy, love your charm, I think you're absolutely, um, brilliant, genius...

**Shawneen Gonzalez:** Well thank you.

**Howard Farran:** ...creative, your site's amazing. Uh, if you're a dentist and you haven't checked it out, uh, not only do you need to check it out, you need to check it out with your hygienists and dental assistants, and in fact, I, I do have you technically for one more minute, so I'm

going to ask you, I'm going to ask you one question. Um, I, I have this argument with dentists all the time.

**Shawneen Gonzalez:** Yes.

**Howard Farran:** I believe when the hygienist reads, you know, looks at the x-ray and talks to the patient, because, you know, a lot of times they might think, Well, the dentist is rich and has a nice car and lives in a big house, he owns this place, but the hygienist, I mean, no one thinks their hygienist is on commission or gets paid a dollar for every cavity she finds. And they're in there for an hour, and, and I, I, when I'm in the other room doing some...cementing a crown and someone asks my dental assistant a question like, Well, will you show me that, or What is that...I, I, some dentists say you absolutely cannot answer that question, you say, We've got to wait for the doctor, and for 27 years, I've always said, You talk to them like they're your mother, your brother, your best friend...what do you think about hygienists and, uh, hygienists in particular, um, talking about radiographs in front of patients?

**Shawneen Gonzalez:** Um, I think that they can definitely say what they're seeing on the radiograph, but they do want to also maybe phrase, Hey, well, I see something here that may look a little concerning, but we're going to ask the doctor when he comes in, just to get his or hers final opinion, and that comes, the reason you have to, they might want to put that little disclaimer in is only because of the legal issue. Legally speaking, yeah, and I know, I know what you're saying. Legally speaking, that some dentists are a little more like, No, they can't touch it. So, you know, but they can go through and they say, You know, I just don't like how this looks. Let's just really work on your,

you know, oral hygiene instructions right now, and then when the dentist comes in, we'll see whether or not they agree or not, and you know, just ask questions. Yeah, I mean, I think it's okay, just maybe not go too far, because you want to make sure they don't accidentally say something that may freak out the patient, that's the catch.

**Howard Farran:** And on that note, I just want to remind all hygienists that I've never met a hygienist serving time in jail for reading an x-ray.

**Shawneen Gonzalez:** (Laughs) Yes that is true.

**Howard Farran:** Hey, Shawneen, you're an amazing person. Thank you for giving everyone an hour of your time in your life, and uh, it was amazing. Thank you very much.

**Shawneen Gonzalez:** Well, thank you.

**Howard Farran:** Alright, have a great day.

**Shawneen Gonzalez:** You, too. Bye.

**Howard Farran:** Go Big Red.

**Shawneen Gonzalez:** (Laughs)

