

Harvard School of Dental Med. | Remote Orthodontic Care Beyond the Pandemic

Good afternoon. It is my great pleasure to welcome everyone to the Harvard School of Dental Medicine's continuing professional education, CPE Today Talk Number 5. Title, Remote Orthodontic Care Beyond the Pandemic.

My name's David Kim. I'm the director of the continuing professional education at Harvard School of Dental Medicine. And I'm very pleased to introduce our moderator, Dr. Katie Klein.

Dr. Klein is a board-certified orthodontist and an instructor in the oral and maxillofacial surgery department at Harvard School of Dental Medicine. She is also the course director of the surgical orthodontic at HSDM, and the co-director of the orthognathic surgical team at the Massachusetts General Hospital.

Dr. Klein, the coronavirus pandemic has changed how dentists have been providing emergency and urgent treatment. Orthodontic patients require continuity of care at a scheduled time interval. And it appears that implementation of virtual consults and remote monitoring became the norm in dentistry.

These technological advances may help us to reduce the number of patient visits to our office. It will be very interesting to us to see how our patient care has been modified and what we can expect in terms of the future of the orthodontic treatment.

Thank you, Dr. Kim. This has certainly been a challenging time for all of us in the dental field, and particularly orthodontics. Many of us have newly experienced taking care of patients through the computer and felt the frustration of wanting to simply reach through the screen and clip a broken wire, replace a missing O-ring, or just pop off that broken appliance.

Clinical procedures that typically take less than a minute or two to manage in our office can sometimes take on a life of their own in a virtual platform and result in the expenditure of exponentially more time. Many of us have never seen more awkward close-ups of both ourselves and patients while attempting to look around the patient's cheek to actually see whatever it is they're trying to somewhat unsuccessfully show us.

And many of us have never agonized more about the logistics of taking care of the staff members with whom we work so closely and appropriately outfitting our practices to meet guidelines and maximize patient safety. And most of us have never sweat as much as we do now under multiple

layers of PPE.

Despite all of these hurdles, my orthodontic colleagues have impressed me tremendously. They are simultaneously taking care of hundreds of patients with active appliances in place virtually, growing their practices by seeing new patients and discovering strategies for communicating competence and warmth across the digital platform, seeking out opportunities for increased professional growth through continuing education, and creatively thinking about ways to adapt and respond to this new situation and reimagine the future of orthodontic care.

Orthodontists have pivoted well. It is my great pleasure to introduce our two presenters, my colleagues, who will provide timely and interesting insight into the practice of orthodontics both during and beyond the COVID-19 pandemic.

Dr. Mohamed Masoud is the director of the advanced graduate education and orthodontics at HSDM and is a board-certified orthodontist. He has also served as an examiner for the American Board of Orthodontics.

Dr. Negin Katebi is the director of pre-doctoral orthodontics at HSDM and is a board-certified orthodontist.

We want to note that today's presentation contains the opinions of our panel of experts, not those of HSDM. Drs. Masoud, Dr. Katebi, we will turn over our discussion to you.

Thank you, Dr. Kim and Dr. Klein, and Dr. Katebi for being part of this. And I'm going to start out today by just disclosing that I don't have any conflict of interest with any of the companies that are mentioned in this presentation. I do have a patent on one of the methods that are mentioned. It hasn't been commercialized yet.

So what we're going to talk about today is, I'll start out with a case that I treated a couple years ago that taught me a lot about what is possible in a remote setting. And then from there we're going to move on to reflect and see what things we can do to set ourselves up better to serve our patients in situations where in-person appointments are not possible.

So I'll start out with Selene. Selene, when I first saw her was 11 years, 7 months old. Primary concern was labially positioned upper canines and crowding. No significant medical history. And she had a history of trauma to her upper central incisors which was related to her social history, which involved living on a 50-foot aluminum boat.

So Selene's parents are explorers, and they're on a global climate expedition. And she spends months on end in the middle of the ocean. So in-person appointments were not really possible for her, at least not on a regular basis.

In her panoramic X-ray you can see she has quite a bit of crowding, blocked out upper canines, lower right first pre-molar, second pre-molars and developing, second molars are erupting, third molars are all developing.

You can see here on [INAUDIBLE] she's bimaxillary retrognathic skeletal class 2, [INAUDIBLE] upright upper and lower incisors. Hypodivergent.

You can see that lower right first [INAUDIBLE] is blocked out. Both upper and lower midlines are to the right of her face. The upper canines are blocked out.

So this is a challenging case in any setting, even in an in-person setting, this is a challenging case. And it's complicated by the fact that she can't come in regularly. So all the things that I would have liked to do for someone in her situation-- using 2x4s for opening space for the [INAUDIBLE] out teeth or using some kind of growth modification or expansion. Those are things I was really reluctant to do on her because I knew I wasn't going to be able to see her more than 2, 3 times a year.

I didn't want her having to deal with an emergency that couldn't be dealt with if she's in the middle of the ocean. So we decided to treat her with clear aligners, even though at that time I thought it wasn't the best tool for the problem. And we had long conversations with the parents, and I explained to them that it would be an improvement. She signed on that in the consent form that we would do our best, but it would be extremely unlikely that we'd be able to get an ideal result given the fact that we're going to attempt to treat this case with clear aligners, knowing that it's not the best tool for her.

In the setup instructions we asked for 20 degrees of [INAUDIBLE] rotation and 2 to 3 millimeters of distalization of the upper right molar. We asked for some class II elastics. And what I was shooting for was to hit the labially displaced upper right canine against the lingually displaced lower right first pre-molar and have her wear a reverse cross elastic to support the distalization and help with both displacements.

I asked for the both midlines to be moved to the left and [INAUDIBLE] of the upper and lower incisors both to make the bite shallower and to provide space for the blocked out teeth.

And we asked for virtual bite turbos. Back then, this was before Invisalign MA was available. So we basically asked for virtual bite turbos. And we asked the patient to bite on the turbos to serve as a

form of functional appliance, if you will.

So this is the first clincheck they gave us. And this is something you want to watch out for. Clear aligners is not-- it might be less taxing on your chair time, but it involves-- if you're going to do it right, it takes a lot more of your time in front of the computer.

So the first clincheck they sent us, if you notice here, the lower right first pre-molar was scanned. It was present clinically. But in the first clincheck you'll see that it's missing. And as they open spaces for it-- as the clincheck opened spaces for it, you eventually get a pontic to represent it. But that first aligner would not have fit it if I approved first clincheck that we got.

And that's something to watch out for. You always want to make sure you check the clincheck for teeth present in real life and present virtually.

We have the same problem on the upper right. See, that upper right canine was scanned. But it just wasn't there in the setup. For the upper left canine, again, it was present, but they gave us this pontic to represent where it is and allow it to erupt.

For this clincheck, this was a later clincheck, a later version of the plan. And another thing to watch out for here they gave us the impact of the blocked out tooth. But as you see here as it erupts, we all know that that tooth, the unerupted part of that tooth is wider. But here as that tooth erupts, it gets narrower. So sometime around the aligner 25 to 30, that aligner is going to stop fitting.

So the software, the AI, the technicians, they're not the providers. You're ultimately responsible for the case. And the provider needs to watch out for stuff like that. The system can't treat patients without a provider at the wheel.

This was like plan 7. And at this point I was pulling my hair out because I kept asking for that rubber band cutout on the lingual of that lower right first pre-molar so I could use an elastic to help move that tooth labially. I knew that the aligners on their own were not capable of moving that blocked out tooth to the labia. I needed help from rubber bands. And at this point they gave me a pontic, which still didn't serve the purpose because I couldn't wear a rubber band to the tooth.

This is plan 8 that we ultimately approved. So apparently they can't give you a cutout if the clinical crown's too short. So at this point they finally gave us the appearance of the crown, but we ended the work around was that we asked them to bring the gingiva higher, so to make the clinical crown shorter, not longer.

What that does is I know that that lingual part of that cusp is present clinically. So I would put a button on it. And the aligners just cover the buccal cusp. So it's a work around the limitation of the system.

So that's ultimately the plan that we end up approving. See the mid-line swing to the left, the teeth proclining and that pre-molar moving to the labial.

And on the right side we get some distalization supported with a rubber band from the upper right canine that's buckled to the lower right first pre-molar that's lingual.

So we started her January of 2017. And this is her in September. She's on aligner number 41 of 54.

And at this point she's lost a lot of her baby teeth. The first pre-molar is nicely in the arch. I had a couple of FaceTime meetings with her. This was before I knew of Zoom. Zoom might have existed, but I didn't know it was an option. But we did FaceTime.

And most of the crowding is gone. At this point she had lost a lot of baby teeth, so we decided to scan for a refinement. We didn't continue beyond aligner 41.

The focus of the refinement was to get it a bit more crystallization. The crowns of those upper centrals, they tip to the left, but the roots were still off to the right. And we wanted some extra space to give her some upper lateral incisor [INAUDIBLE].

And we saw her again in October. She flew in just for the-- to start the refinement in October. So it took us about a month to get her refinement ready.

And this is after that first refinement. So this is after the second set of the aligners. So this is June of 2018.

You can see here the canines are in a good plus 1 at this point. We built up her upper laterals that same appointment. And we scanned her for her another refinement.

The purpose of the second refinement was to fine tune the upper second molars. And at this point we're out of the woods. And we're just being picky and working on the details, getting the gingiva margins right, getting the midlines a little bit close. We're still tipping those roots of those [INAUDIBLE] a little bit more to the left and fine-tuning the occlusion on the second molars.

This was the pattern we took at that second refinement. We used it as her final x-ray, as her final set of radiographic records because the fine-tuning we were going to do is not-- it was not something

that was-- we wanted to use the x-ray to guide us through the last refinement. And whatever changes we would make with it really impact the x-rays.

So we use these as our progress/final x-rays at this point. You can see here she grew quite a bit. Her profile is a lot more orthognathic. Her lips have a bit more support. Upper and lower incisors are nicely defined.

And growth definitely helped us. She was an amazing patient. And the upper and lower incisor inflation are giving the lips a lot more support at this point.

These are her final photographs. She was 19 months in treatment. We had six appointments. And the second refinement helped us get the even a lot more [INAUDIBLE]. That's her before and after.

And I learned a lot from this case. First thing was that I could do a lot more with clear aligners than I thought I could. And sometimes we need a challenge to kind of push us and let us know what is possible.

And it's not easy. It was a lot of work. Between the initial clinchecks and then the refinements, we made it to 18-- we went through 18 plans. So it might save you some time in the chair in the actual clinic, but it does take a lot of your time in front of the computer.

And good, reliable patients can be seen less than usual, than what we're used to. Some level of remote care is possible. And we need to embrace change, especially at this time.

A lot of direct-to-consumer options are filling a need that the patients have. Whether it's cost, whether it's time, whether it's availability. And I think we need to adapt and make sure that we're providing services that meet our patients' need while still maintaining our standards.

And we're not-- I just want to clarify that we're not talking about direct to consumer, because that has a lot of problems of its own. We're talking about remote care that still involves some procedures that are necessary to have in person.

You do need a clinical evaluation, a periodontal evaluation. You still need radiographs, things that often don't happen in the direct-to-consumer business model. You still need to evaluate a patient's profile and take that into consideration when you're deciding on your treatment plan.

Most clear liner cases require attachments and elastics and interproximal reduction and things that you can't do in a direct-to-consumer model. And finally, even in the cases that you start out that you

think are the most simple often involve problems. And troubleshooting is something that just doesn't happen with direct to consumer. So again, we need to be better at making sure we provide the level of care we want to provide or we need to provide and still meet our patients' needs.

So some of the things we can do better is planning our attachments and IPR around times when we know we're going to be able to see our patients in person. So for example, if we know our patients aren't going to be able to come in for another 10 weeks, we need to know that from the consultation what their availability is or what our scheduling is like, and make sure that we plan attachments and IPR at times when we're going to be actually able to see the patients.

There are a lot of tools out there that allow orthodontists to provide care that doesn't involve companies manufacturing aligners. There are a lot of applications that allow orthodontists to move the teeth themselves and either have the models printed in a lab or in 3D printing in-house. And that can save our patients-- specialty ones that have minor irregularities where those kinds of patients, we can provide-- if we're not having to pay a lab an extensive amount of money, if we don't have that lab fee, we can probably save our patients a lot and provide them care at a cost that's comparable to the direct-to-consumer options.

We all know that aligners have limitations. There are movements that aligners are just not capable of performing. And we need to get good at those hybrid systems that involve aligners with braces or aligners with other options, aligners with growth modifications, phasing it.

We've been doing a lot of research on tunnel attachments. And they're basically, it's a hybrid between fixed appliances and aligners. They're basically attachments where you can thread a wire through to help you reach that predetermined virtual goal.

And we've got some different cross-sections for it. And the template allow you to bond it to the teeth. So here's an example of at patient. She's a little bit open. And open bite cases are great for clear aligners.

She also had a habit. And we did give her some tongue reminders. But you see here she's coming close to the end. And if you look closely, that lower right lateral incisor isn't tracking very well. It needs to extrude, and it needs its root to tip a little bit.

And that's a movement that's extremely easy with braces but extremely difficult with clear aligners. And having a system that allows you to benefit from both is advantageous in a situation like this.

So we virtually-- we took what we set up on clinchecks. And you could use this with any clear aligner

system. And we moved the tooth to where we wanted. And you can see the tunnel attachments are [INAUDIBLE] at this point.

And this is her wearing the aligners and the sectional wires to help upright those teeth. And the benefit of doing it this way is that the aligners and the wire are working completely in sync.

So this is the other thing we can do is also remote monitoring, which Dr. Katebi is going to cover. But here this patient was followed up actually during the pandemic. We can see her starting to close up on that side where she's a little bit open and that lateral needed to erupt. And you can see here that from January to April you can see that lower right lateral is level with the remaining teeth.

And here's another patient. Again, this patient has very protrusive lips and open bite tendons via some crowding. Extremely proclined upper and lower incisors.

We need to take her face into consideration here. Even though the crowding isn't severe, she does need to have teeth taken out to bring those lips back. This is also someone that I was seeing-- I was only able to see her a few times during treatment. And we had to treat her with aligners.

But you can see aligners, this is what happens when you close extractions with spaces with aligners. The molars tip forward. And we told her from the beginning we were going to need to use fixed appliances to get those roots parallel.

So we virtually in the clincheck we corrected the inclination. The tips of the teeth, we got them parallel, but we knew the aligners weren't going to be able to do that. So we set up these tunnel attachments with double wires.

And we also monitored her remotely. You can see here between November and February, something that typically takes aligners multiple refinements to achieve, if you can achieve them, happened in just a few months. We can see here that molar upright and with those tunnel attachments with the aligners.

So in summary, we kind of went through a few cases that show that you can achieve good results with remote monitoring. And some of the things we can do to help facilitate that. And then I'll hand the podium over to Dr. Katebi to talk to you about some of the tools that are available to help with remote work [INAUDIBLE]. Thank you.

Thanks, Dr. Masoud. That was really [INAUDIBLE] on.

[INAUDIBLE]

Hello, everyone. Thank you for joining us today. I'm excited to be with you all. And I appreciate the opportunity to be part of this wonderful series.

We are going to continue our conversation about the remote orthodontic care beyond the pandemic. Briefly, I have to mention that I do not have anything to disclose.

Here is the outline of my presentation today. I will start by introduction to telehealth and teledentistry. Then I will share how I think our orthodontic practices got affected due to the COVID-19 pandemic. What are the available options and solutions out there that we can utilize. And I will finish with my take-home message.

As we all know, COVID-19 pandemic has altered our economy, society, and health care system. On the flip side, the pandemic has also catalyzed the accelerated growth of telehealth or the entire spectrum of operation used to provide remote care.

So according to this recently published article, their takeaway message is, whether health care enterprises are ready or not, the new reality is that virtual care has arrived. So we better be ready for it.

So let's talk about a little bit about telehealth in general. Telehealth has a very broad definition. And you may find so many different descriptive versions of it.

Here I'm using the information that is provided by the American Dental Association. And according to them, telehealth is not a specific service and refers to a broad variety of technologies and tactics to deliver virtual medical, health, and education services.

The next question that comes to mind is, how about patient perceptions of telehealth? I have to say that there are some studies that they investigated to answer these type of questions. And the results are very consistent with each other.

Here I'm referring to this publication that was published in the *American Journal of Managed Care* in January 2019. So a group of scientists and clinicians here in Boston and Mass General Hospital looked at patient and clinician experiences with telehealth for patient followup care, and interestingly found that 79% of responding patients had a very positive experience with it and found it very convenient.

Now you may ask, how is this relevant to dentistry? Which basically that brings us to teledentistry, which is under the umbrella of telehealth. And according to ADA's comprehensive policy statements, teledentistry refers to use of telehealth systems and methodologies in dentistry.

Teledentistry can include patient care and education delivery using live video, store-and-forward, remote patient monitoring, and mobile health. So if you are participating inside United-- if you're practicing inside United States and have any questions regarding services that you render during the COVID-19 quarantine time, such as which codes you need to use or how the insurance coverage works, then I would recommend to check out this document from ADA on the bottom of my slide. That was actually released on May 11, 2020 in response to COVID-19 and [INAUDIBLE], which I believe it is the latest version today. But as you all know, that might change soon due to all rapid changes around the COVID-19.

It is very important to make sure that we are keeping our patients out of ER during the pandemic. And I believe teledentistry in dental practices and nursing homes can help to deliver patients-- to divert, basically, patients in pain or any sort of dental or orthodontic problems from the ER. We can leverage it to help do our part in fighting this terrible virus.

And similar to how I talk to you about the patient perceptions of telehealth, let's see how the patients feel about with virtual dental care. According to a survey on teledentistry, which was completed before the pandemic in September and October 2019, 78% of patients said that they are ready to start using teledentistry. So that's the good news.

Now let's focus more on orthodontic practices and how they got affected by the pandemic. So it is important to realize that the impact is not just on orthodontists, but our patients got affected by it as well. From their perspective, they will have a fear of coming into our practices.

Demand to be seen first. I'm pretty sure you all have patients that are already in treatment and are expected to be seen as soon as your clinic opens up. Most likely, fewer patients seek orthodontic treatment due to increased unemployment.

Our patients will have some extra time limitations as well. Right now, even running a simple errand takes much longer than before. Imagine time limitations when everyone is back to work, which change the working hours and other restrictions. And of course, there is the neverending direct-to-consumer competition.

From orthodontists' point of view, we have to deal with regulations forcing us to reduce clinical

volume due to social distancing and excess authorization needs. We need to control overheads, increased costs, PPE, and most likely lower revenue.

We need to create a safe environment for patients and staff. And it is super important to know that we need to be dynamic and ready for another possible practice disruption, which could be another spike due to COVID or any other catastrophes.

So when we think about solutions to what I just discussed, and in regards to pandemic, we must consider the key phases of any crisis, which is response, recover, and thrive. And consider them concurrently. When we are going through a challenging time, if you want to be successful, then we need to emerge more resilient on the other side.

Therefore, my recommendation would be to implement strategies that they will not only sustain you today, but also prepare you for tomorrow and help you thrive in this new modern virtual era. So be creative with your virtual appointments. It will serve you well.

So in order to come up with some solutions, first let's talk about what are the services that you can actually provide virtually from orthodontic point of view? I think preliminary exam and consultations fit beautifully in this category. You can take your time answering patients' and parents' questions, check the insurance status for them. Even some part of this visit can be done with your treatment coordinator to make sure your time is used more productively.

We can review and monitor progress with aligners. I personally believe that patient compliance plays a huge role in the success of an orthodontic treatment. So we need to make sure that they are engaged and they are following the protocol that was given to them.

Retainer checks can be done virtually, especially if no appliance adjustment is needed. We can evaluate growth and tooth eruption on those patients that we place them on observation. We can also use virtual appointments to assess appliance breakage and decide on the steps that need to be taken to address the problem more efficiently.

As a first step to your original appointments, whether that virtual appointment is going to be for a new patient consultation or for a clear aligner check or for a retainer check, you are going to need some intraoral pictures. So here are some written instructions that can be provided to your patients to help them take the intraoral pictures for you.

There are basically two techniques, one using two spoons and the other one using two fingers to remove cheeks out of the way. And as you can see, the above pictures are taken with spoons in this

slide. And the lower ones are taken with fingers. So you can also ask for some extra oral photographs such as smiling, resting, and resting in profile, which you can also see in this picture.

All right. Now let's see how good my patients follow those steps. Here are intraoral pictures of two of my patients.

They were given both written instructions and a link to a YouTube video that was made by an orthodontist who was showing the steps to take the intraoral shots. You can find more links if you look for them online.

So what do you think about them? The top row is actually a patient in active treatment. So you can see [INAUDIBLE]. And the shots are not bad at all. However, she's not biting down all the way. And for some reason she thought upper and lower occlusal shots are not needed. So it's not giving me a whole picture.

The second row is a child that had been placed on observation. Upper and lower occlusal shots are not bad. However, all the other three, including frontal, right, and left buccal shots are not diagnostic at all. Actually not biting down, and also due to the spoon pressure, she is moving her lower jaw in the direction of the force, which is not helping as well.

So this patient has a couple of siblings. I see all of them. And each are in different stages of their treatment.

So I wanted to see intraoral pictures for all of them. And that is what I asked from their mom. When I first received these intraoral pictures, I thought to myself that this is not working. The rest are going to be taken the same way. And I have to call mom to talk to her.

While I was thinking about options in my mind, I received these second sets of intraoral picture from the same patient. As you can see here, it is a big improvement compared to the previous one. And I also can see a [INAUDIBLE] factor there.

I also received another set of photos from her brother, which was equally good. But I did a little editing, such as copying and changing the angulation of these pictures. They actually came out very decent, almost similar to the ones that are taken in office visits.

So basically the lesson that I learned from this experience is that maybe a small tool change such as providing our patients with some cheek [INAUDIBLE] might help us a lot to collect the information that we need. I also think if we use a guided tool that can walk our patients through this process it

would be helpful so that everything is in one place.

If you think about available options that they can help you, I think first you need to decide which platform and technology would be most useful for you, your practice, your patients, and also your staff. Would you like to use an application which you can ask your patient to download it to their smartphone and then utilize that?

Maybe your most effective way of communication is through texting. Then you can consider a text-based platform.

You might be interested in something that can be incorporated into your website, and patients can click on it. In that case, you are looking at widget-based applications.

Or you may be interested in using artificial intelligence. I also have seen practices that combine these available technologies and solutions. For example, they might use a service for scheduling and sending reminders to their patients, but also use another effective tool to recruit new patients. And on top of it, they are using the AI technology to monitor their cases, whether that would be braces or aligners.

I have to mention that we need to do more research to provide more solid evidence when it comes to efficacy of new technologies and the claims that the companies offering them are making so that we can be more confident in our clinical care.

Here I summarized some of the most popular options that are commonly used by orthodontists here in the US and also around the world in order to-- and basically I put them in the order that they were founded. As you can see in this table, each option has its own advantages and disadvantages. And I hope this helps you in your selection process.

Again, some are good for new patient recruitment. Some are very helpful for patient conversions. And some might be good for treatment monitoring. When you are weighing your options, please keep in mind that your staff also needs to go through a learning curve with anything new that you introduce as well.

So I would like to finish with a positive note that we are definitely going to come out of this. We are all together in this challenging time. And hopefully we can thrive out of this situation.

I believe virtual consult patients are here to stay. We were using them before, we are using them now. And I think we will be using them in the future.

Please use the technology with caution and as a complement to your direct clinical exam, and not a total replacement. Try your best to keep your patients engaged. The compliance is a very important ingredient to any orthodontic treatment success. And you need to make sure that you are keeping your patients engaged and compliant.

To recent grads, if you are someone who graduated recently or are going to be graduating soon, I want you to know to not to be stressed too much about the situation, and know that the golden era is still here, just got reinvented. And it will be up to you how to make it work.

And last but not least, I would like to finish by a quote from Charles Darwin. "It is not the strongest of the species that survive, nor the most intelligent, but the one most responsive to change." With that, I would like to thank you all very much for your kind attention.

Dr. Masoud and I would be happy to answer some questions. And now I would like to give the virtual podium back to our wonderful moderator, Dr. Klein.

Dr. Masoud, Dr. Katebi, thank you so much to both of you for these excellent presentations. We are certainly living in an everchanging situation. And it's helpful to gain insight and useful information on how orthodontic care can be provided both during and beyond this pandemic.

There were several questions that have been raised from listening to your presentation, and I'd love to ask them to you now. Has this pandemic changed how you structure your thinking about functional appliance selection in class II cases, particularly as we move forward in this situation where we may need less in-person appointments for a period of time?

So I can go first.

Great.

So I think in terms of class II and functional appliances, I use a lot a removable type of functional appliances. And I think they are very helpful, especially if we are not going to see our patients for a long period of time. So they are not going to basically work beyond that what is needed to be done.

And I have to say there are some cases that our hands are tied. For example, the patients are coming to us a little later. And maybe those appliances are not going to be as effective as possible. But in general, I think if a patient needs a functional appliance, the situation is not going to stop me from providing that type of treatment for them.

And yeah. I agree. I also use a lot of removable functional appliances. And depending-- if there are situations where the compliance isn't great, and you need to use something fixed. And again, depending on how long this pandemic lasts for, yeah. It probably will affect that decision.

Whereas if you think you're not going to be able to see the patient for another 10, 12 weeks, you might want to think twice about putting a Herbst [INAUDIBLE] in and having to deal with emergencies that you can't really deal with effectively.

Very true. I'm definitely thinking along the same lines in my practice as well.

Another question that I'm curious to hear what you're both doing is how you're managing IPR or interproximal reduction in patients with clear aligner cases both during this time and moving forward.

Well, I think when the shutdown happened, we didn't really know-- I don't think anyone expected it to last this long or be this involved. We didn't know it was coming.

So a lot of the cases that were in aligners had interproximal reduction that was scheduled. And we obviously couldn't do it during that period. And we just have to move on and hope for the best.

And we're expecting that once we restart, hopefully soon, there are going to be a lot of refinements that are going to have to happen. We'll find out, but my guess is that there are going to be a lot of refinements because we had IPR scheduled, but we couldn't actually do it because of the situation.

But in general, I think if you know you're not going to be able to see your patients regularly, I think it's a good idea to plan your IPR within the clincheck based on how frequently you think you can see your patients.

So I usually don't like doing IPR at the first appointment. If I can afford to do that. But if our chair time is limited, then we might have to start doing it during the first appointment.

If I know I'm seeing patients after, you know, 8 weeks, then I'll schedule my APR at that point when I'm going to see them [INAUDIBLE].

I completely agree with Dr. Mamoud. I think we are in the same boat. The ones that were already in treatment, there was nothing specific that we could do about them. But I think moving forward that would be definitely something that we can plan a little bit better thinking about what if we won't be able to see them for a long period of time.

And I think also one thing that's especially relevant to this situation right now with creating

[INAUDIBLE] is that maybe you want to consider doing the IPRs with the hand strips rather than using the handpieces so that we will basically reduce that aerosol creation. So that's my approach to IPRs for the patients anyways.

I usually don't use handpieces. And if you are not using that, maybe that would be something to consider beyond what [INAUDIBLE].

Right. A couple of questions have just come in about attachments, which I know is another thing to think through. Certainly for new cases that have come in when our practice had been closed, I've re-engineered the case and had a new case mailed without attachments. But what's your strategy for managing attachments right now? Are you treatment planning cases with less attachments and just planning for more refinements? Or are you leaving the attachments on? How are you thinking about that?

That's such a great question. So for the ones that I'm actually doing refinements, most likely even without considering the whole pandemic situation, I usually don't remove all the attachments. I will try to utilize. Basically I capture them in the scan and try to utilize them for refinement.

So that's [INAUDIBLE] really change. And I think in the beginning we need-- I think we need to see our patients to deliver. So that first appointment is going to be still important. I think we can utilize that appointment to still place those attachments.

So I think I won't change in regards to not having attachments at all. But also I think the good thing about attachments are that if they break, they are not creating an extreme emergency or urgency for the patients to be seen right away. So if they break, I mean, the worst-case scenario-- OK. That one may not track as great. And we can basically capture it during the refinement. But it's not going to be a big inconvenience to patients or family members.

I'd love not to use attachments, but I think aligners just struggle with, like, lateral incisors, without attachments, they just don't track, unfortunately. So like Dr. Katebi, I generally-- I know Invisalign recommends removing the attachments before you scan for a refinement. But unless there is [INAUDIBLE] there's a change in the type of movement we're doing, usually the refinement is just continuing this same type of movement that was planned the first time around. So there's no reason in my mind why the attachment would have to go.

Now the exception is if they're optimized attachments, and those have certain activation in them. And you could make a case for removing the optimized attachments and then keeping the non-optimized

attachments.

But I think in general the push surfaces you're creating with the attachments for the first round of aligners, the second round of aligners usually needs the same push surfaces to be there. So I generally keep-- I actually think their attachments work better the second time around because there's no error introduced with the indirect bonding of the attachment. You scan the attachment, and then the aligners fit them perfectly.

You don't have to [INAUDIBLE] with error involved in placing the attachments.

Yeah. I agree with that. How has this pandemic impacted orthodontic education?

We're doing a lot more on Zoom, I think like all other types of education. But if we have the benefit in orthodontics where a lot of the skills involved in the specialty are diagnosis and treatment planning and things that can actually be taught-- effectively taught remotely. Now you lose out on some of the clinical skill parts. But I think the majority of the specialty is diagnosis and planning. And our residents generally present all their cases before starting, during treatment, and at the end of treatment. And that's continued.

So it's a problem-based learning environment. And I think we managed to do our best with it remotely. Even our clinical examinations, the case-based exams and the scenario-based exams. We ran all of those this year virtually. And it worked out surprisingly well. And I think it's-- a lot of those things that we did are probably here to stay because they were effectively done in a remote setting.

Yeah. I completely agree. We got actually very creative and innovative during this time. And I think some of the tools that we utilize, I think we would be able to utilize them later on.

And we are trying to use our time a little bit more efficiently, I would say, in some cases for example, now the clinchecks are done via Zoom with a virtual one-to-one type of a attention to the residents so we can sit with them rather than being in a busy clinic floor.

And I think it has provided some advantages. Obviously, if you're talking about any situations, there are advantages and disadvantages to any situation. But I think we learned some stuff from this experience. And it's been great having alumni, orthodontists from all over the world, coming joining us, joining our case presentations and provide their insights.

So yeah. We're happy with that.

Well, you all should feel proud of what you've accomplished. And the residents are really doing an excellent job of pivoting as well during this time.

You know, we're really sorry we didn't get to answer other questions. But unfortunately, we are out of time. I want to thank our panelists, Dr. Katebi, Dr. Masoud, for their invaluable information. And thank you so much, everyone, for joining our session today.

We have a lot of challenges ahead. But we're going to stay in this together. We hope you all stay safe. And let's stay connected to continue to navigate through this unprecedented crisis together.

Any final thoughts, Dr. Kim?

Yes. On behalf of the Harvard School of Dental Medicine Continuing Professional Education Committee, I would like to thank our presenters and moderator for their expertise and for sharing their experience and insight. Today marks our final CPE Today Talk Series.

We created the series in direct response to the changes in the field of dentistry that we are all experience together due to COVID-19. The mission of this initiative was to invite experts from different areas of dentistry to share the latest practical clinical information, as well as scientific research on how we can navigate the challenges we are facing as a dental community.

For the past five weeks we have covered a wide range of topics ranging from public health, geriatric dentistry, pediatric dentistry, oral surgery, periodontics, endodontics, oral medicine, oral pathology, and orthodontics. 17 moderators and presenters gave us deep insights into how we need to adapt to the new norm doing this pandemic. But at the same time, they have encouraged us to find new opportunities to improve our patient care.

For sure, the organizers of this series have gained a lot more as we spend many hours working with experts via Zoom preparation sessions. Personally I like to think and recognize two special individuals. Miss Tiffany Sarkissian and Dr. Jennifer Chen, who spent so much time and effort with organizing, preparing, executing, and editing these programs for our audience.

For the past four CPE Today Talk Series, 1,800 dental professionals from 39 countries were able to tune in to our program. And we are grateful for you all for being part of our HSDM community. If you have not been able to join us for those previous talks, you can go to our school's website, www.HSDM.Harvard.edu and watch them at your leisure.

Thank you so much for your trust in us. And we hope to see you in near future either in Boston or via

virtual communication. And please visit our school's website for upcoming virtual courses for CPE credit. And farewell, and we wish you all stay healthy and well. And thank you, everyone. Bye bye.

Thank you.

Thank you.

Thank you.

Thank you.