



Practice Development Series

Orthokeratology and Myopia Management Where Are We Today?

Presented by Maria Liu, OD, PhD, MPH, MBA, FAAO

An interview with Craig W. Norman, FCLSA



[Craig Norman](#)

Dr. Maria Liu, thanks for answering a few additional questions pertaining to your May 20, 2020 Practice Development Educational Series webinar sponsored by ABB Optical.

Here's our first question.

"When do you begin preparing a parent for the possibility of either orthokeratology or myopia management?"

[Dr. Maria Liu](#)

So, this is what I do. I bring this topic up to everyone who themselves are a high myope, especially if I start seeing some early signs of degenerative myopia during their dilated fundus exam.

Additionally, any time I am seeing a myopic shift of the children's refraction.

I want to emphasize that usually the first time we have this conversation, it is not effective. It seems we are not able to communicate this very well, but we feel it is important that they are aware there is such a thing of as myopia management.

Once the parent brings back their child for another eye exam and they notice a change in the refraction this same conversation is much more effective.

[Craig Norman](#)

You mentioned in your presentation that often you will have a discussion with a patient regarding myopia management in children even before they become a parent. How does that work?

[Dr. Maria Liu](#)

Often, I will start a discussion with married couples regarding their high myopia.

A lot of adult patients say to me they wish they themselves had this option but had never heard about myopia control until this conversation.

So, we cannot just assume that they know there is such an option and we can't assume they will elect to have the treatment for their children in the timely fashion.

[Craig Norman](#)

You did not talk much about atropine tonight.

Although not directly related to Ortho K it sure is an option for myopia management. Can you describe what role atropine plays in your practice?

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[Dr. Maria Liu](#)

We have been using low dose atropine in the concentration range from .01% - .05% at Berkeley. I also had a lot of experience using atropine at a much higher concentration of 0.1% - .25% percent in China.

So, from our past 5-6 years of experience with atropine, we do feel it is not as efficacious as compared to the optical treatment probably for several reasons.

The literature is telling us that the .01% is apparently not as effective, so now we have shifted toward a starting concentration of .02% if this is the primary myopia controlling option for that patient.

Additionally, atropine does not have any optical benefit. So, kids who are who are on atropine need to wear glasses during the day. That is not really a positive behavioral modifier, so freeing kids from a spectacle correction is a big component in the overall myopia management from our perspective.

I am more optimistic in seeing atropine combined with either multifocal daytime contacts or overnight OrthoK as compared to atropine as a standalone treatment.

[Craig Norman](#)

Do you see it having a role with OrthoK as well?

[Dr. Maria Liu](#)

Absolutely! In OrthoK there are several clinical studies investigating whether low dose atropine would have a synergistic anti-myopia effect if combined with overnight OrthoK.

There are two popular theories behind this combination treatment.

One, enlarged pupil size is able to potentiate the influence from the peripheral defocus as well as the higher order aberration with the same corneal molding, both of which are shown to contribute to the anti-myopia effect from OrthoK.

The second theory is related to the synergistic effect at the back of the eyes.

While atropine's axial inhibiting effect has been proposed to be mediated through the muscarinic receptors of retina, RPE, choroid, and sclera, the anti-myopia effect of the optical treatment is mediated through the dopamine pathway. As a result, it is plausible to expect an additive effect from the combination treatment.

So, it is kind of like a glaucoma treatment where using two medications from different mechanisms in the hope to achieve a better synergistic effect.

[Craig Norman](#)

So, low dose atropine, which may not be as effective on its own combined with either multifocal soft lenses or OrthoK seems to give more benefit than either one of them alone.

That is the case in animal models, and we are waiting for the human studies. There are two randomized controlled studies in Hong Kong, and I know there are a couple in the US. And there are certainly several in China.

We are waiting to see whether we have any consistency in terms of this synergistic effect.

[Craig Norman](#)

As you know in this field often, we make the leap to the results before they come in.

[Dr. Maria Liu](#)

I totally agree with that practice because we can't afford to wait until we get a definitive result. Especially when the risk we are taking is minimal compared to the potential benefit we may get from a leap-forward application like this.

[Craig Norman](#)

The last time you and I chatted you thought maybe 60% of your new fits were now being used with a toric design. Is that still the same?

[Dr. Maria Liu](#)

I think at Berkeley right now, it is probably close to 75 to 80% of my new fits.



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But we have multiple practitioners fitting lenses and they tend leave me the more challenging fits. So that may also play a role in why I have such a high proportion of toric/dual axis designs.

I really believe toric/dual axis lens design usage is increasing overall. More ECP's are paying attention to the corneal shape and elevation data, as well as the significant impact from lid interaction on the fitting of the lens. So, it makes sense to use something different than just the traditional spherical design to achieve a more uniform landing of the lens in the peripheral cornea.

[Craig Norman](#)

During ortho-k fitting sometimes ECP's overlook the detailed output provided by topography. For instance, the scale at the bottom of the difference map nicely shows the width of the treatment zone, the changes in the mid peripheral area and the amount of power change within the pupillary margins.

Do you have any tips regarding reading a topography map?

[Dr. Maria Liu](#)

Yes, make sure you look at more than just the colors on the map. And change the color scale as well to pick up subtle changes within the different zones.

[Craig Norman](#)

What else is important in managing myopia in children?

[Dr. Maria Liu](#)

I think we need to emphasize overall myopia management. There is a difference between myopia correction, myopia control versus myopia management. In my opinion myopia management entails a much wider scope of practice from prevention and early detection to the management of a complications even after the myopic progression has stabilized.

It's really a lifelong effort. We need to be there for the patient during the whole cycle.

[Craig Norman](#)

Do spectacle lenses for myopia management have a place for in your practice – either now or soon?

[Dr. Maria Liu](#)

I am a firm believer that they should play an incredibly significant role in overall myopia management, especially talking from a public health point of view.

For instance, there just is not enough practitioners applying specialty contact lenses and low dose atropine, especially in commercial settings where they may not have specialty instruments monitoring changes.

And since myopia has becoming the number one condition worldwide there has to be a public health effort that's applicable to different levels of practitioners and patients of various socio-economic status.

We have to have some option that's safe and convenient and can be applied to different types of demographic distribution.

[Craig Norman](#)

Thank you, Dr. Maria Liu for your insight and passion. Your recent webinar was terrific and this Q&A session extremely interesting as well.