Why I Chose to Perform a New Procedure on a Loved One

This surgeon performed CXL on his daughter, who had developed early keratoconus.

BY WILLIAM B. TRATTLER, MD

Corneal collagen crosslinking (CXL) is an important treatment option for patients who develop corneal ectactic conditions, ranging from keratoconus and pellucid marginal degeneration to post-LASIK ectasia. First developed in the late 1990s by Theo Seiler, MD, the technology for CXL has undergone a number of innovations and changes that has led to improved safety and efficacy of the procedure.

The first clinical trial for US Food and Drug Administration (FDA) approval of CXL, sponsored by Peshke, was initiated in 2008. As an investigator in that trial, I learned firsthand that CXL was an effective treatment for patients with progressive keratoconus. However, with this study and in an additional study, I also learned that, with the removal of the epithelium (epi-off), CXL was a surgery that carried some serious risks, including delays in epithelial healing, corneal haze, and the potential for corneal infection.

In 2010, after a lecture on epithelium-on (epi-on) CXL by Brian Boxer Wachler, MD, we initiated a protocol change to our CXLUSA clinical trial to allow treatment without epithelial removal. The main step that made these epi-on CXL procedures successful was observing patience with the loading of riboflavin. Careful evaluation of the corneal stroma to ensure adequate riboflavin loading prior to initiating the ultraviolet-A light treatment led to good results and avoided the risks of corneal haze and infection that can occur with epithelial removal.

Another interesting finding with epi-on CXL is that some patients can have a dramatic visual improvement on postoperative day 1. Case in point was the youngest patient who underwent epi-on CXL in our study in 2012: a 9-year-old boy who had developed bilateral keratoconus and had preoperative BCVAs of 20/50 in each eye. On postoperative day 1, his UCVA had improved to 20/30 in his right eye and 20/25 in his left. This dramatic improvement further bolstered our confidence that epi-on CXL was not only as effective as epi-off CXL but also had the ability to provide more rapid visual improvement in some patients.

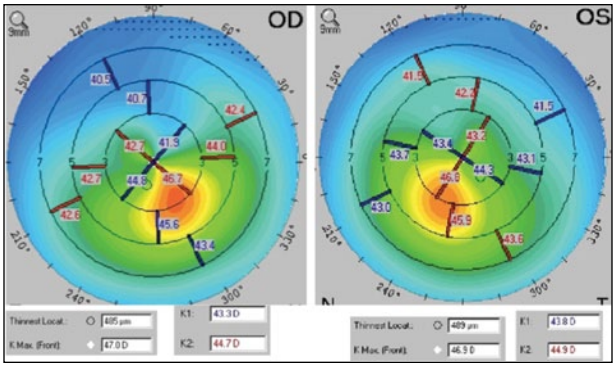

Figure 1. In December 2012, the author determined that his daughter had developed early keratoconus, as defined by a progressive change in her corneal topography shape with inferior corneal steepening.

CXL IN A FAMILY MEMBER

As the parent of three children and the son of an ophthalmologist, I realize that friends and family members can develop any number of eye conditions. For example, one of my father's colleagues, a retina specialist in Miami, experienced retinal detachments.

When my daughter Ali developed mild myopia in 2009, I not only provided her with a pair of glasses, but I also performed topography, which was thankfully normal.

However, in December 2012, when my daughter's

OD	UCVA	BSCVA	Refraction
Pre Op (12/18/12)	80+2	20	-2.75 +1.25 x150
Postop 3 months	60	20	-2.25+0.75X150

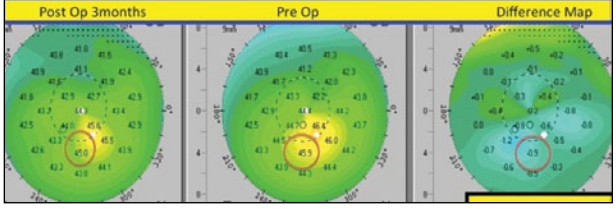

Figure 2. Following epi-on CXL, the author's daughter had improvement in her corneal shape, as seen on Pentacam difference maps. Both the right and left eyes had similar levels of corneal flattening.

myopia and astigmatism progressed, I was surprised to see that she had developed early keratoconus, as defined by a progressive change in her corneal topography shape with inferior corneal steepening (Figure 1). Fortunately, Ali was aware of CXL because it was something that we had discussed at home. She understood that the procedure was an important step in preventing her vision from worsening. Additionally, the procedure had the potential to provide her with improved vision over time.

I performed epi-on CXL on both of my daughter's eyes in January 2013, and she has had an excellent result to date. Ali has had improvement in her corneal shape, as shown on Pentacam (Oculus Optikgeräte GmbH) difference maps (Figure 2). She also has had a reduction in refractive cylinder.

Although she experienced discomfort on the day of her procedure, she had a fast recovery and was able to return to school the day after her surgery. In retrospect, Ali reports that the procedure was easy, and I believe she is appreciative that we caught her condition so early.

CONCLUSION

I am happy that I got involved early in the investigation of CXL in the United States. Although the procedure is not yet approved in the United States, I am excited that the innovations that have been developed in the field allowed my daughter to have a successful treatment for her condition. ■

William B. Trattler, MD, is the director of cornea at the Center for Excellence in Eye Care in Miami, Florida. Dr. Trattler states that he has no financial interest relevant to the products or companies mentioned. He may be reached at tel: +1 305 598 2020; e-mail: wtrattler@earthlink.net.