

SANJAY PATEL: My name is Sanjay Patel, and I'm one of the cornea transplant surgeons at Mayo Clinic in Rochester. I have been quite interested in visual outcomes after endothelial keratoplasty for Fuchs dystrophy, and wanted to share with you a couple of interesting findings from our recent work. We've been running a prospective study of endothelial keratoplasty specifically Descemet's stripping endothelial keratoplasty for Fuchs dystrophy. And I follow the patients sequentially over time.

The first thing I'd like to tell you is that we've assessed quality of vision in Fuchs dystrophy. And what's been interesting is that there's differences in quality of vision according to the patient age. Specifically, younger patients actually suffer more from impaired glare, as opposed to a loss of visual acuity. And it's the older patients who actually have a decline in visual acuity, and complain less about that glare. And these glare measurements were made objectively with an instrument called a stray light meter in which we were able to show that glare was significantly higher in the younger population compared to the normal controls.

What's even more interesting is that endothelial keratoplasty actually helps to improve the glare in this younger population. And in fact, endothelial keratoplasty improves the glare much more in younger patients than it does in older patients. What this means is that in clinic when we see younger patients, it's important to elucidate what the visual symptoms are. And talk to them about that glare symptoms, their low contrast vision, low light problems with vision.

And what we also showed was that by measuring their glare by using a stray light meter, you could actually determine whether they would improve after endothelial keratoplasty or not. And we were able to come off with a cutoff value to determine which patients would benefit from surgery. So it's quite possible that these younger patients in your practice who may benefit from an endothelial keratoplasty, recognizing that there's limitations of doing this kind of surgery in younger patients in some situations, but in many situations, you may actually improve outcomes for these patients.

The second aspect of vision that I'd like to share with you is the frequent notion that after endothelial keratoplasty decreased visual acuity is assumed to be because of scatter from the lamellar interface in the cornea. We actually ran a study here at Mayo where we induced scatter in a group of patients. And we also induced aberrations in the same group, and tested the visual outcomes. Now these two phenomena scatter and aberrations are elements, optical elements that affect the point spread function or the image that falls on the retina.

In a nutshell, what we found was that inducing scatter levels way in excess of those that patients after endothelial keratoplasty experience reduces visual acuity minimally. This means that scatter from the lamellar interface after surgery is not likely to be the reason why these patients suffer from degraded vision afterwards, and therefore, one has to question whether attempts to improve that interface are actually going to improve visual acuity outcomes. What we did find was that aberrations similar to those that we would measure after patients who have had an endothelial keratoplasty do affect visual acuity quite a bit more. And in fact, it's more likely that the aberrations in this population are going to be the main reason why these patients don't see as well after surgery. And our data suggests then that improving the aberrations after surgery might be more beneficial for trying to improve visual outcomes.

In summary, think about elucidating symptoms from your younger patients with Fuchs dystrophy, specifically their glare symptoms, and considering whether an endothelial keratoplasty might benefit those patients. And secondly, consider that aberrations from the cornea might be more of an impediment to visual acuity than light scatter from the surgical interface.