

# My Personal Account of Laser Blended Vision

More than 2 years after surgery, my refraction is 0.00 -0.25 X 3° in the right eye and 0.00 -0.25 X 68° in the left; I can still see J1 up close.

BY PAIT TEESALU, MD, PhD

I decided to undergo corneal refractive surgery about 3 years ago. My refraction was approximately -4.00 D in each eye. At that time, I was performing more than 1,500 cataract surgeries per year and was growing tired of having to clean my spectacles after virtually every procedure. My glasses would be pushed up my nose when looking through the operating microscope; my eyelashes would touch the inside of the spectacles and cause discomfort. Additionally, wearing glasses did not inspire confidence when consulting with refractive surgery candidates. I realized that every fourth patient was asking—and probably every other patient was thinking—why I was still wearing spectacles. As I became more involved in the field of laser refractive surgery, my confidence in today's excimer laser technology grew, and I decided that I wanted to have LASIK.

## QUESTIONS LEFT TO ANSWER

Before making a final decision on my procedure, there were a few outstanding questions that I wanted answered. First, I had to find an excellent surgeon with extensive experience, knowledge in managing any type of unusual situation that may arise, and clearly documented outcomes both in terms of safety and efficacy. We know that each surgical procedure involves a finite risk of complications; however, from my own cataract surgical experience, I knew that a large volume of procedures increases a surgeon's skill and confidence and

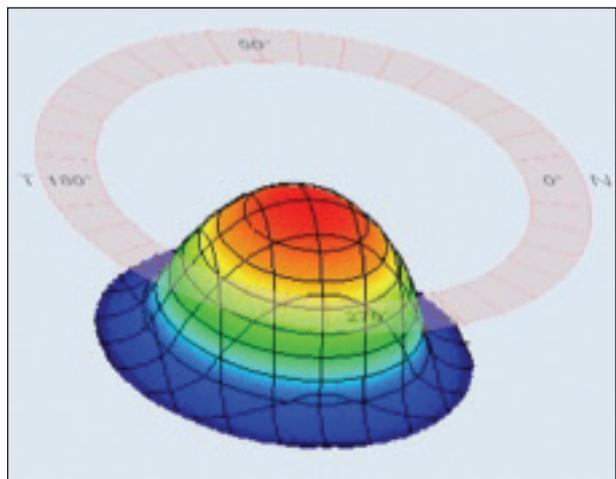


Figure 1. The ablation profile for Dr. Teesalu's procedure.

lowers the probability of complications. Second, I was concerned about the imminent onset of presbyopia, as I was 42 years old at that time. Third, as a microsurgeon, I could not afford any decrease in binocular vision or contrast sensitivity.

Initially, I was aiming for monovision with myopia of -0.50 or -0.75 D in my nondominant eye, thus avoiding the need for a retreatment in a few years. I tested my tolerance of monovision with trial contact lenses. The 0.50 D add contact lens was easy to tolerate, but I experienced asthenopia when wearing the 0.75 D add contact lens. I performed several cataract procedures to

check my intraoperative binocular vision with the 0.50 D add in my left eye and the respective correction on the left ocular of the microscope to compensate for this add. I found that it did not hinder my contrast or visual quality. However, contrast sensitivity loss after LASIK was still a major concern.

At that time, I also was in the process of investigating different excimer laser systems, and my research included visits to several clinics and courses. I attended an advanced LASIK course at the London Vision Clinic. There, Dan Z. Reinstein, MD, MA(Cantab), FRCS, DABO, FRCOphth, introduced his work on presbyopic LASIK (ie, presby-LASIK), which he has been conducting for the past 5 years to develop a system he calls *laser blended vision*. The concept behind laser blended vision is to increase the depth of field in both eyes using a nonlinear aspheric ablation profile that Professor Reinstein developed. This increased depth of field is then combined with micro-monovision, in which the nondominant eye is targeted for a slight myopic correction that does not exceed -1.50 D. The target depends on the patient's age, degree of presbyopia, and tolerance. As both eyes have similar visual acuity in the intermediate range or *blend zone*, the tolerance of anisometropia between the eyes improves compared with traditional monovision. The increased depth of field also postpones presbyopia in emmetropic eyes because less accommodation is needed for near vision.

The vast majority of my refractive surgery patients are aged in their 20s or early 30s, so naturally I was surprised when most patients at the London Vision Clinic course were in their 40s and 50s. Although I did not fully understand the mechanism of laser blended vision at the time, I was impressed with postoperative day 1 results in presbyopic patients—this was not just simple monovision.

### BOTH EYES CORRECTED

Flying back home to Estonia, I felt that my decision-making process was complete; I was enticed by the laser blended vision. Therefore, I returned to the London Vision Clinic a couple of months later to meet with Professor Reinstein. After discussing the options for my own refractive correction, I decided to forgo my initial plan for monovision and instead correct both eyes to emmetropia. Professor Reinstein explained that the increase in depth of field induced by the nonlinear aspheric ablation profile would provide sufficient near vision for another 5 to 10 years. Additionally, the profile would provide me with even better quality optics than in my untreated eye because the increase in spherical aberration that I suffered with aging would be reversed.

Although I felt heartbeats in my ears when I lay down on the bed for surgery, the surgery itself was quick and

easy—at least from the patient's perspective—and lasted less than 10 minutes. This experience is invaluable because I can now empathize with patients during LASIK in a new way; I can better understand their feelings and emotions by thinking back to my own experience.

### POSTOPERATIVELY

After the procedure, it took only a few hours before the lines on the ceiling of the hotel room became sharper. It was nirvana when I woke up the next morning, as I could see better than ever before with glasses. My refraction was initially around 0.50 D in both eyes, but I could see clearly at all distances. The biggest issue I experienced after surgery was that the artificial tears and antibiotic eye drops temporarily blurred my vision. There were also halos around lights during the first few days after surgery—probably due to corneal edema. The dryness was also a little uncomfortable for a few weeks, and it was more noticeable on days with long surgery lists or extended computer use.

During the first month or so, driving at night was a new experience; oncoming car lights looked different than before the surgery—smaller actually—and it was sometimes difficult to determine exactly how far they were from me. However, within about 2 months I had adapted, and my night vision improved.

Now more than 2 years after surgery, I am 44 years old and my vision is great. My refraction is 0.00 -0.25 X 3° in the right eye and 0.00 -0.25 X 68° in the left; my UCVA is 20/12.5 in each eye. My near vision is J1, and I can read newsprint at 20 cm. Additionally, I can still bend a capsulorrhexis needle without any visual aids. Before surgery, I was particularly concerned about the possibility of a drop in contrast sensitivity, but it has actually improved from the mid-normal range to the high-normal range.

Needless to say, I am glad I decided to undergo laser blended vision.

### IN THE FUTURE

I realize that my presbyopia will continue to progress and my near vision may at some point need a boost; however, I am convinced that I will go ahead with a laser blended vision retreatment to induce micro-monovision when the time comes. I am not 100% sure that I will never need glasses for reading, but I am quite convinced that I will be spectacle free for the next 10 years, thanks to Professor Reinstein's laser blended vision procedure. ■

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