

Cooking For Engineers

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WEDNESDAY, FEBRUARY 22, 2006

Off Topic: LASIK [Normal view](#) Printer-friendly

Last Friday, I had LASIK eye surgery performed on my eyes. The results were both immediate and impressive. Here's how it went down.

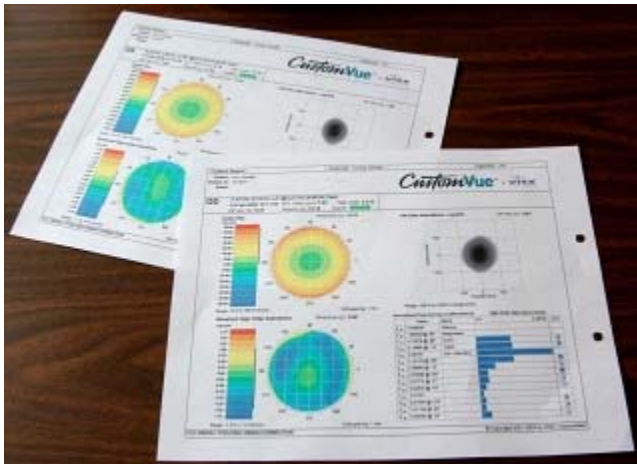
A couple weeks ago, I decided to go ahead with LASIK after several friends had undergone the surgery. Several friends and coworkers (including my wife) recommended [Dr. Michael Furlong](#) in Campbell, California.

Laser assisted in-situ keratomileusis (LASIK) is an operation that involves cutting a flap from the cornea of the eye. The interior of the cornea is then shaped with an ultraviolet excimer laser and the flap replaced. Using the flap greatly assists the healing process and is the reason when LASIK is so popular (as compared to PRK or LASEK eye procedures). The main requirements for LASIK candidacy are reasonable prescription (-0.75 to -11 diopter nearsightedness, +0.75 to +4 diopter farsightedness, and 0.75 to 4 astigmatism), a pupil diameter that is smaller than 8.5 mm, and a corneal thickness greater than 500 microns. (Requirements may vary due to prescription and specific eyes.)

The Monday of the week prior to my operation, I went in for a consultation to determine if I would be a candidate for LASIK or CustomLASIK (a more recent innovation in LASIK allowing the correction of higher order aberrations in the eye). At the consultation, they determined that I fit the requirements for CustomLASIK. The main requirement that I'm aware of for CustomLASIK (in addition to those requirements for traditional LASIK) is to not have thin corneas. The minimum corneal thickness desired is 500 microns (average thickness is 520 microns). Luckily, my corneas were in the 580 micron ball park. Everything else checked out and they agreed that they could improve my -8.5 D (left eye) and -9.5 D (right eye) myopia and astigmatism (which is bad enough that the 20/something rating isn't used anymore - it's somewhat worse

than 20/4000). They also went through a PowerPoint presentation (or something similar) complete with animations showing me how the operation would proceed as well as the statistical data of patients needing enhancements (additional operations - which was a very low percentage) and other similar information. The staff was very open and answered all my questions. My visit ended with a brief introduction to Dr. Furlong who was happy to answer any questions that his staff hadn't answered yet. By that time, I had run out of questions. It was kind of nice to meet him face to face as my consultation.

The Tuesday before my operation (St. Valentine's Day), I went in for my full preoperative examination. During the hour at the office, they measured my exact prescription (with my eyes dilated), produced a wavefront mapping (a picture of how light rays are refracted by my eyes), and did a few other tests to check the health of my eyes. Having completed that, I was ready for the operation (and I got a recipe for [Orzo Risotto](#) while waiting for my eyes to dilate).



Wavefront Maps for my left eye (background) and right eye (foreground)

On the day of the surgery, I arrived at the doctor's office at around 10:40am (and was on my way home by 11:45am). After signing my release forms, I paid for the operation and was given a small pill (supposedly, a fast acting sedative). I placed the pill under my tongue and waited with Tina in the waiting room for a few more minutes. Then I was taken into a ready room where my eye lids were sterilized and a few final instructions (which I don't

remember) were given to me.

They noticed that I was still quite anxious, so they asked if I wanted another sedative. Since the first one was obviously a placebo (or I'm immune to sedatives), I agreed to a second one.

To help calm me down, the staff (and the gentleman prepped for operation before me) chatted with me. As the other gentleman was taken into the operating room, the staff continued to talk to me about chocolate and food. I'm not sure how much time passed as I talked about potatoes and protein content in vegetables.

Soon, I was taken into a dimly lit room where a man (who turned out to be Dr. Furlong) entered and applied some eye drops (anesthetic drops, I think). After a few more minutes of talking about food, I was ushered into the operating room.

Dr. Furlong asked me to sit and lie down on an operating bench. After lying down, I asked for something to hold onto. They gave me a Nerf football to squeeze.

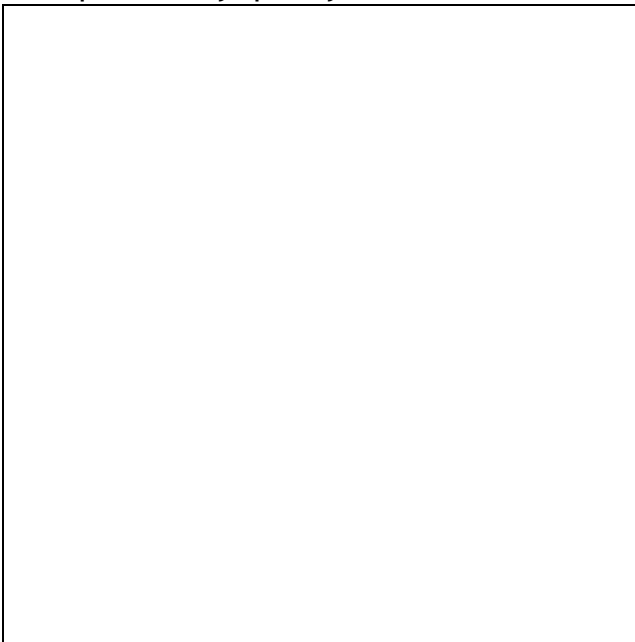
They covered up my right eye and then started with my left eye. Dr. Furlong explained each step of the operation. First they insert something to keep the eye open (so you can't blink) called an eyelid speculum. Suction is then applied to the eye (to keep it from moving) and a device called a microkeratome cuts through the top of the cornea to form a 160 micron flap. The flap is folded up and a computer controlled laser reshapes the internal corneal tissue through a series of quick blasts. The flap is then folded back down and the eye immediately starts to heal.

What I remember, is tiny pin pricks as Dr. Furlong put the device on me that pulls open my eye lids. I remember casually commenting that I could feel that and the numbing eye drops might not be working. Dr. Furlong reminded me that they didn't numb my eye lids and to please look at the blinking red dot. I looked up (which was straight ahead since I was lying down), and saw a blinking red dot surrounded by a bluish white circle or insanely bright light. It seemed

to me that the circle of light was so bright that the rest of the world turned dark as my eye adjusted to the brightness of the light.

Then Dr. Furlong said I'd feel some pressure and the lights would go out (probably not what he said, but I don't remember the exact words he used). Everything started to get dark and within a couple seconds I couldn't see anything anymore - the world had faded out to black. I swear Dr. Furlong asked me to keep looking at the red dot - but there was nothing to look at. I might have remembered incorrectly since I did have a double dose of sedatives.

At this point, I felt something rotating on my eye (the microkeratome). No pain, no irritating, I just felt the movement. Then the world started to fade back and the circle of light with the red dot was back - except now it had both a crisp and hazy quality to it.



Then there was a repetitive buzzing, cracking sound and a strobing light that seemed to come from a different direction every time it went off. This seemed to take a lot longer than I expected. It was probably less than a minute, but it seemed to take a quite a while. At the same time, I could start to smell a light odor that reminded me of melting rubber. I was later told I was smelling the burning flesh. There was a device that was vacuuming up most of the smell from the air.

Through the whole operation, Dr. Furlong's voice was there telling me what to do (look at the red light). Meanwhile, I kept thinking: *What happens if I accidentally stop looking at the red light? Keep looking at the light; keep looking at the light. Should I be squeezing the football this hard?* Being a primarily visual person (and generally nervous when it comes to my eyes - so nervous I never even tried contact lenses because I couldn't abide the thought of sticking my fingers in my eyes everyday), I usually just close my eyes when I want to avoid an uncomfortable situation or to calm down. Well, unfortunately, I couldn't - I was forced to watch the blinking red light.

Then the flap was replaced and Dr. Furlong started swabbing my eye with something. I don't know what he was doing, but it just looked like he kept brushing my eyeball - like when I'm cleaning the CCD of my Nikon D100, except instead of doing it once, he kept swabbing and swabbing. He explained that the corneal flap was sealing itself (like a living bandage). Then he stopped and released the eye so I could finally close it.

The operation was repeated on my right eye, but much faster (it seemed).

In less than ten minutes from when I laid down, I sat back up and was told I could open my eyes (because I had closed them as soon as possible). I opened my eyes and could actually see! It looked like I had a soft focus lens on though. The staff noticed that I was quite pale and gave me a Kern's Mango Nectar. I have to say, I was pretty freaked out over the whole experience, but I made it through.

After a few quick checks, Dr. Furlong had his assistants tape these plastic shields on my eyes (to keep me from accidentally rubbing them) and released me. I don't actually remember much else - I think after the adrenaline wore off, the double dose of sedatives finally kicked in.

The next morning, when I woke up, I opened my eyes and was amazed. The world wasn't perfectly crisp, but I could focus on basically everything I wanted to. The image I could see would be sharp and slightly hazy at the same time. (As if I had a sharp, high-resolution image superimposed with a blurry one.) I

was most amazed by the ability to look around without moving my head. (When wearing glasses, the only part of the world that was in focus was the area covered by the lenses. That meant looking up, down, left, or right meant the world was out of focus.) Now, with my post-surgery eyes, I could see - it was amazing. Plus everything within four feet of me looked much bigger than ever. With glasses, everything seemed to have been shrunk, but now, everything was bigger than life.

I went in for my first post-operation examination and there it was determined that I had 20/20 vision in my left eye and 20/15 vision in my right eye. They told me the haziness was due to inflammation and would reduce over time as my eyes healed.



Simulation of haziness in
high contrast areas

posted by Michael Chu @ 2006-02-22 00:48:30