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Advances in LASIK and other vision correction procedures increase approval in extreme and physically demanding professions

All-laser LASIK cleared for NASA astronauts and U.S. military personnel

San Francisco police officers considering vision correction have another reason to be confident in LASIK, now that the National Aeronautics and Space Agency (NASA) has approved the advanced, all-laser LASIK technologies for use on U.S. astronauts. More than 12 million LASIK procedures have been performed to-date, making it the most common elective procedure in the U.S. But it wasn't until LASIK developed into an all-laser procedure that NASA approved it for use on pilots and mission and payload specialists who face extreme, physically demanding conditions in space. The recent NASA decision was made following review of extensive military clinical data using a combination of two technologies: the femtosecond IntraLase laser to lift the top layer of the cornea and the wavefront laser to then change the shape of the inner cornea so that patients can see better without glasses and contacts. This combination of laser technologies is called the

all-laser LASIK and it has been found to provide superior safety and vision compared to the earlier methods that involved the use of only one laser.

"Being ejected from an F16 or subjected to the G-forces of atmospheric blastoff is as extreme as it gets", said Dr. Ella Faktorovich, Director of Refractive Surgery at Pacific Vision Institute in San Francisco and the author of "Femtodynamics", the first book on femtosecond laser application to eye surgery. "With the combination of two lasers instead of one, as with the earlier forms of the procedure, even patients with the most demanding occupations and lifestyles can be confident that they will have improved vision with the procedure that has proven to be extremely safe as well." All-laser LASIK has also been cleared for U.S. military personnel, including Air Force pilots.

Advances in screening technology increase safety

Sophisticated screening technology is used to determine if LASIK is the right choice for the patient or if another procedure will be a better option.

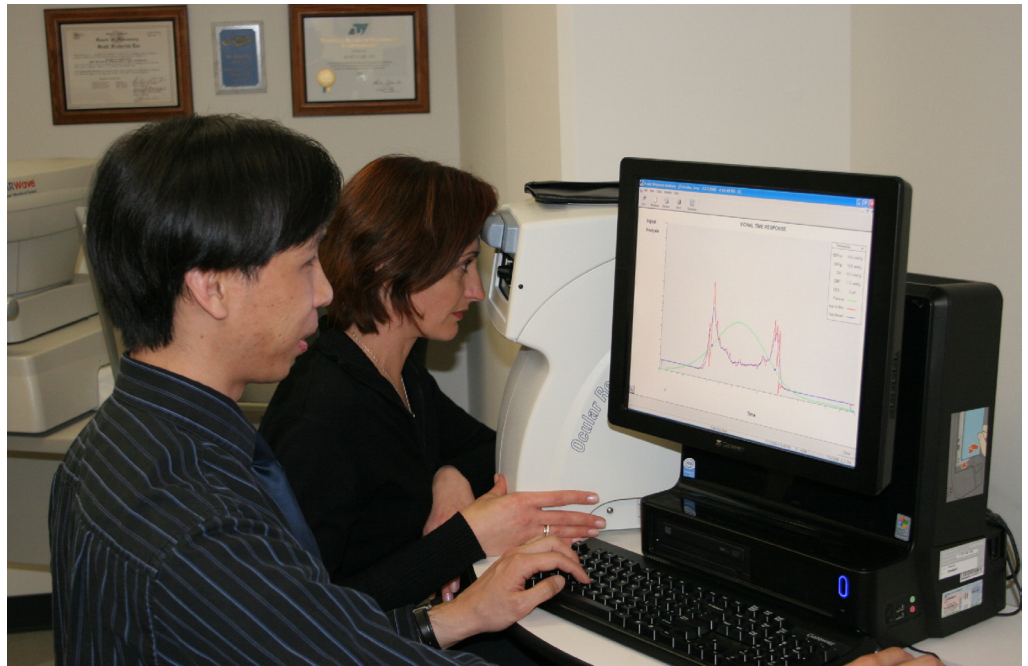
Traditional screening methods involve measuring prescription, checking eye health, and, determining if the cornea is smooth enough and thick enough for LASIK. Over the past several years corneal screening technology evolved – we can now detect very subtle irregularities or "bumps" on the front surface of the cornea. Some times these bumps are so subtle that they are not visible when the pictures of the front surface of the cornea are taken directly. These bumps can only be seen when the pictures are taken of the back surface of the cornea. The bumps will appear as shadows. Patients who have irregularities on their outer corneal surface may not be good candidates for LASIK. These patients may do better with other procedures, such as PRK (photorefractive keratectomy) for example, or ICL (collamer lens implants). With the help of the advanced imaging technology, patients can be steered toward the safest procedure for them.

Another advance in screening for LASIK came with the introduction of innovative technology called Ocular Response Analyzer (ORA). With

ORA, we can determine if the patient's cornea is strong enough to have laser vision correction. Up to now, we could only take pictures of the cornea and measure how thick it is. From this, we would infer if the cornea is strong enough for laser vision correction. With ORA, we can measure corneal strength and flexibility directly. The measurements are done much like we do most of the other tests in the eye doctor's office – the patient sits at the machine with their chin resting comfortably and looks at the light in front of them. A quick, gentle puff of air is used to determine what is called "corneal resistance factor" and other features of corneal strength. The result adds confidence that if LASIK is recommended, it is the right choice.

Non-laser options in vision correction surgery

While LASIK is one of the most common procedures performed, it is not right for everyone. Patients with certain prescriptions, corneal features, and vision needs may do better with non-laser procedures such as implantable collamer lenses (ICL), for example. ICL is a biocompatible collagen placed behind the cornea. While it provides a permanent correction, the ICL may be removed or replaced if the prescription or future technology makes it appropriate. Officer Anthony Calasanz of SFPD came to a LASIK vision screening hosted by Pacific Vision Institute at the POA building last year. During his consultation process, it was determined that due to his corneal shape, LASIK will not give him the best vision possible. Instead, ICL procedure was recommended. He underwent ICL procedure with excellent results. "I have worn contacts for over 15 years", says Officer Calasanz. "When I would wake up, everything was blurry until I put on my contact



Ocular Response Analyzer is used to test the strength of the cornea to determine eligibility for LASIK

lenses. Before I went to sleep, I would have to remove my contacts, which was rather cumbersome. After my eye procedure, my eye sight improved greatly. Now everything is clear, and I don't have to worry about losing a contact lens."

Options to see better without reading glasses

In the upcoming "Ask the Doctors" column of the San Francisco Chronicle, Dr. Faktorovich answers one of the most common questions people over 40 years old have for their eye doctor: "Is there anything for me other than reading glasses to see small print?" The reason we need reading glasses as we get older is that the lens inside our eye loses flexibility making it difficult to see up-close. Non surgical options can help, such as bifocal contact lenses or monovision contact lenses, where one eye is corrected for distance and the other eye is corrected for near vision.

Laser vision correction is a popular choice for many people facing the loss of near vision, and it involves mo-

novision LASIK or PRK. "I've worn glasses for over 40 years," says Officer Alex Takaoka of SFPD (Northern Police Station) who had monovision LASIK at Pacific Vision Institute, "I couldn't see distance or read without glasses or contacts. My drawer was full of glasses – old prescriptions, prescription sunglasses, shooting glasses, bifocals, and each one costing about \$500. Advances in technology, have given me 20/20. My sight picture for rifle/pistol competition target shooting has never been clearer. And I don't need reading glasses."

Other options to reduce dependence on reading glasses include CK (conductive keratoplasty) and RLE (refractive lens exchange) where sophisticated intraocular lenses replace your natural lens to improve both distance and near vision. The latest generation of dynamically-focused intraocular lenses can mimic the flexibility of our own lens when it was young.

For more information, please contact Pacific Vision Institute at (415) 922-9500 or info@pacificvision.org.