



The Austin Diagnostic Clinic
Ophthalmology Department

Laser Vision Correction

Frequently Asked Questions

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What is Laser Vision Correction?

Laser vision correction is a procedure that uses an excimer laser to correct nearsightedness, farsightedness, and astigmatism. During the treatment, the laser's cool beam of ultraviolet light removes a small amount of tissue, usually less than the thickness of a human hair. Short pulses of this cool beam laser light change the curvature of the cornea, allowing images to be more sharply focused on the retina.

The excimer laser can be used to treat **nearsightedness, farsightedness, and astigmatism.**

- 1) **Nearsightedness** occurs when the curve at the front portion of the eye, known as the cornea, is too steep resulting in blurred images at a distance. In a normal eye, the cornea and the lens of the eye focus light to form an image on the back surface of the eye known as the retina. With nearsightedness, the eye focuses or refracts too much light causing images of distant objects to form in front of the retina and appear blurry.
- 2) **Farsightedness** occurs because the cornea is too flat resulting in blurred images at near. In farsightedness, the eye does not focus or refracts too little light causing images of distant objects to form behind the retina.
- 3) **Astigmatism** is the result of an irregular curvature of the cornea. Light rays cannot be brought to a single focus point and so objects appear blurry and possibly broadened or elongated.

Can laser vision correction treat presbyopia?

Presbyopia occurs because of the loss of the eye's ability to change focus due to the natural aging process. The loss of elasticity of the focusing lens in the eye can make it more difficult to see things that are close-up. To some extent, this occurs in everyone as they age. Most commonly it begins to appear in the mid to late 40's and can continue to progress. Laser vision correction **cannot** treat presbyopia. People with presbyopia will still need to wear reading glasses after laser vision correction. Some people with presbyopia may choose to have monovision treatment, where one eye is corrected for clear distance vision and the other eye is undercorrected to give clear reading vision.

What are PRK and LASIK?

There are two different laser procedures which can be performed to correct nearsightedness, farsightedness, and astigmatism. Both procedures have excellent visual results. Both procedures can be performed with the traditional laser treatment or with the custom laser treatment.

- 1) **Photorefractive Keratectomy (PRK), also known as Advanced Surface Ablation:** The excimer laser beam is used to remove small amounts of tissue from the front of the cornea after the surface of the cornea (the epithelium) is removed with a brush. The epithelium heals within 5 to 7 days. The surgery itself is not painful, but patients will experience discomfort until the epithelium heals. No flap is made in the cornea, so risks associated with the flap in LASIK are eliminated. PRK may be the best treatment for people with thin corneas who are not candidates for LASIK or in people who may have other contraindications to LASIK.
- 2) **Laser In Situ Keratomileusis (LASIK):** LASIK is similar to PRK, but does not alter the epithelium. In LASIK, a circular flap of tissue is created. The flap can be created by a blade (*microkeratome*) or by a laser (*IntraLase*). The flap is lifted from the cornea and the laser treatment is performed in the area previously covered by the flap. The flap is then repositioned over the cornea. There is less discomfort after the surgery than in PRK and quicker visual recovery.

What is IntraLase?

IntraLase is the first **blade-free** laser technology for performing the first step in the LASIK procedure: creating the corneal flap. IntraLase eliminates many of the complications seen with the blade microkeratome, improving safety and precision. The creation of the flap is more accurate with the computer-guided IntraLase than the hand-held microkeratome.

What is CustomVue laser treatment?

CustomVue is individualized laser vision correction which provides a more precise level of measurement and correction never before possible. Using WaveScan-based digital technology, doctors can now identify, measure, and correct imperfections in an individual's eyes 25 times more precisely than with standard methods used for glasses and contact lenses. This information is transferred to the laser, providing a new level of precision and accuracy. For more information, visit www.personalbestvision.com.

CustomVue LASIK Results for Nearsightedness

Activity Without Glasses	Patients
Pass driving test	100%
See 20/20 or better	98%
See better than 20/20	70%

One year after CustomVue LASIK

CustomVue technology also includes Iris Registration

Iris Registration (IR) is the first FDA-approved, fully automated, non-contact method of alignment of the correct CustomVue treatment to the corneal site. Using sophisticated algorithms and multiple reference points on each iris, IR ensures delivery of the treatment to the correct area of the cornea. This allows a new level of precision in treatment alignment.

Can I Have Laser Vision Correction?

Just as glasses and contacts help you to see clearly, so does laser vision correction. But there are some guidelines: You must be at least 21 years of age, with healthy eyes and stable vision. Your prescription must fall into the range of approved treatments on the VISX laser:

PRK treatment can be performed on the VISX laser for:

Nearsighted patients (0 to -12.0 diopters) with up to -4.0 diopters of astigmatism

Farsighted patients (+0.5 to +6.0 diopters) with +0.5 to +4.0 diopters of refractive astigmatism

LASIK treatment can be performed on the VISX laser for:

Nearsighted patients (0 to -14.0 diopters) with or without -0.5 to -5.0 diopters of astigmatism

Farsighted patients (+0.5 to +5.0 diopters) with up to +3.0 diopters of refractive astigmatism

Mixed astigmatism up to 6.0 diopters

CustomVue LASIK can be performed on the VISX laser for:

Nearsighted patients up to -11.0 diopters with or without astigmatism up to 3.0 diopters

Farsighted patients up to +3.0 diopters with or without astigmatism up to 2.0 diopters

Mixed astigmatism with astigmatism of 1.0 to 5.0 diopters

Contraindications to Laser Vision Correction

- Collagen vascular disease
- Autoimmune disease
- Immunodeficiency disease
- Keratoconus
- Use of isotretinoin (Accutane), amiodarone hydrochloride (Codarone), or sumatriptan (Imitrex)

- Pregnancy or nursing

Warnings

- Diabetes
- Severe allergies (atopy)
- Herpes simplex keratitis
- Keloid formation

What are the Benefits of Laser Vision Correction?

Laser vision correction is the modern alternative to glasses or contact lenses. The goal of laser vision correction is to reduce or eliminate your dependence on contact lenses and glasses. LASIK and PRK surgery may reduce overall nearsightedness, farsightedness, and astigmatism, therefore reducing your need of contacts or glasses.

Is Laser Vision Correction Safe?

Over 1 million laser vision correction procedures have been performed worldwide in the past 10 years. Data obtained during thorough clinical trials show that most patients experienced a significant improvement in uncorrected vision (vision without glasses or contact lenses) after laser vision correction. However, as with any surgery, complications can occur. Many can be treated, but a serious complication, although rare, could result in poorer vision with glasses or contacts than you had with glasses or contacts before surgery.

Overcorrection or undercorrection are among the more commonly encountered complications. Fortunately, these problems can often be improved with glasses, contact lenses, or additional laser surgery.

Dry eyes are a very common side effect after LASIK. The condition is usually temporary and can be treated with lubricating eye drops.

Other complications can include glare, halos, and increased sensitivity to light. In LASIK, flap complications can occur during or after surgery. Very rarely, scarring, infection, or irregularity of the corneal shape can occur which may result in permanently decreased vision.

The VISX Star S4 excimer laser offers an important safety feature, a 3-D active eye tracker called ActiveTrak. ActiveTrak locates and then automatically sets the treatment center to the center of the pupil. If the eye moves 1.5 mm from the established center point in any direction, the tracker pauses the laser, resuming only after the eye has returned to proper position.

Do I Need an Examination First?

Prior to treatment, you will have a thorough eye examination to determine whether your eyes are healthy and suitable for laser vision correction. If you have been wearing contact lenses, it will be necessary to not wear your lenses for 2 weeks prior to the examination for soft lenses, 3 weeks for toric soft lenses, and at least 3 weeks for gas permeable or hard lenses. A computer image is taken of your eye that will detail the curvature, shape, and overall smoothness and regularity of the cornea. Corneal thickness measurements are taken and refractive stability is verified.

What Can I Expect the Day of the Laser Treatment and After?

Anesthetic drops will be placed in your eye to numb it. In the laser room, you will be seated in a reclining chair. The physician will position your head under the laser and an eyelid holder will be placed between your eyelids to gently hold them open during the treatment. You will be asked to focus on a blinking red light while the laser removes microscopic amounts of tissue from the cornea. The laser will treat your eye for less than one minute and your total time in the laser center will be between 30 minutes to an hour. After your laser treatment is completed, drops will be placed in the eye. While the actual procedure is painless due to the numbing drops, you will experience some slight irritation or low discomfort during the immediate post-operative period. You will receive eye drops to use after surgery.

The First Week Following Surgery

- Moderate pain and discomfort may last for a few days after surgery
- Blurred vision and tearing will occur as the cornea heals
- You will be sensitive to bright lights

The First One to Six Months Following Surgery

- Follow-up appointments will be made to monitor healing
- Your vision should become stable within the first several weeks
- Small changes in vision may occur up to six months or more after surgery

We recommend you plan to have laser vision correction when you can afford a few days to relax. Post-operative visits are required the day after surgery and a week after surgery. Your eyes will be light sensitive for the first day. The healing of the eye occurs during this period so we recommend you take a day or two off of work and avoid any strenuous activity. Vision is usually blurry for the first day or two after the laser vision correction procedure. It is expected that most patients should be able to legally drive without correction within 1 week.

Is Laser Vision Correction Affordable to Me?

Laser vision correction is an elective procedure, and there are very few insurances which cover the cost of treatment. However, the affordability of laser vision correction has never been greater. Consider the cost of replacing your eyeglass frames and lenses or the repetitive costs of disposable contact lenses. Financing is available through the laser center.

Fees include all exams after surgery for one year.

- Consult Exams free
- PRK \$1450 per eye/\$2900 total
- LASIK with IntraLase \$1900 per eye/\$3800 total
- CustomVue PRK \$1950 per eye/\$3900 total
- CustomVue LASIK with IntraLase \$2250 per eye/\$4500 total

Retreatment fees

- LASIK or PRK \$135 per eye
- CustomVue LASIK or PRK \$500 per eye

What Do I Need To Do After My Initial Exam?

You will schedule an appointment at the laser center, the Academy for Laser Vision Sciences (ALVS). There they will perform a WaveScan measurement as part of the CustomVue LASIK work-up, and they will perform pupil measurements. These tests will further determine whether you are a candidate for laser vision correction and CustomVue LASIK. *You must be out of your soft contact lenses for 2 weeks or soft toric contact lenses for 3 weeks before your appointment at ALVS. You must remain out of your lenses after your appointment at ALVS until the laser vision correction treatment is done.*

Academy for Laser Vision Sciences

Barton Oaks Business Park

Building 4, Suite 350

901 South Mopac

Austin, Texas 78746

(512) 349-2015

Before your laser vision correction, review the Patient Information Booklet online at www.visx.com. Select "For Vision Correction Candidates" then select "Patient Information".

Our LASIK Doctor

Dr. Maria Rojas Shepler is a board-certified ophthalmologist who is fellowship trained in cornea and refractive surgery. She has written multiple papers on refractive surgery topics published in Archives of Ophthalmology, Journal of Cataract and Refractive Surgery, Journal of Refractive Surgery, and Ophthalmology Times. Her research in refractive surgery has been presented at national meetings of the American Society of Cataract and Refractive Surgery and the International Society of Refractive Surgery. She is certified on the VISX excimer laser, the IntraLase laser, and the Bausch & Lomb Hansatome microkeratome.

Education

- Undergraduate degree with honors: Brown University, Providence, RI 1994
- Medical degree with Distinction: University of Oklahoma College of Medicine, Oklahoma City, OK, 1998; Alpha Omega Alpha Honor Medical Society
- Internship: Central Texas Medical Foundation, Brackenridge Hospital, Austin, TX, 1999
- Ophthalmology Residency: Stanford University School Of Medicine, Stanford, CA, 2002
- Cornea and Refractive Surgery Fellowship: University of Texas Southwestern Medical Center at Dallas, TX, 2003

Professional Affiliations

- American Academy of Ophthalmology
- American Society of Cataract and Refractive Surgery

Publications

Rojas MC, Lumba JD, Manche EE. Treatment of epithelial ingrowth after laser in situ keratomileus with mechanical debridement and suturing of the flap. Arch Ophthalmology 2004;122:997-1001.

Partal AE, **Rojas MC**, Manche EE. Analysis of the efficacy, predictability, and safety of laser subepithelial keratectomy for myopia and myopic astigmatism using the technolas 217 excimer laser. J Cataract Ref Surg 2004;30(10):2138-44.

Rojas MC, Manche EE. Comparison of videokeratographic functional optical zones in conductive keratoplasty and laser in situ keratomileus for hyperopia. J Refract Surg. 2003 May-Jun;19(3):333-7.

Rojas MC, Manche EE. Phototherapeutic keratectomy for anterior basement membrane dystrophy after laser in situ keratomileus. Arch Ophthalmol 2002;120(6):722-727.

Rojas MC, Eliason JA, Frederick DR. Needle aspiration of a traumatic subperiosteal haematoma of the orbit. Br J Ophthalmol 2002;86(5):597.

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Lumba JD, **Rojas MC**, Manche EE. Analysis of refractive vs. topographic correction of astigmatism after LASEK. IOVS 2002;43:2077.

Rojas MC, Haw WW, Manche EE. Laser in situ keratomileus enhancement for consecutive hyperopia after myopic overcorrection. J Cataract Refract Surg 2002;28(1):37-43.

Rojas MC, Manche EE. Early diagnosis, treatment essential when facing DLK. *Ophthalmology Times* 2001;26(17):6-8.

Rojas MC, Haw WW, Manche EE. Prospective long-term analysis of topographic vs. refractive correction of astigmatism following PARK. *IOVS* 2001;42(4):2649.

Presentations

Lumba JL, **Rojas MC**, Manche EE. Treatment of Epithelial Ingrowth after Laser In Situ Keratomileusis with mechanical Debridement and Suturing of the Flap. Presentation, Symposium on Cataract, IOL and Refractive Surgery, American Society of Cataract and Refractive Surgery, San Francisco, California, April 13, 2003.

Manche EE, **Rojas MC**. Comparison of Topographic Optical Zones for Hyperopia: Conductive Keratoplasty vs. LASIK. Presentation, Fall World Refractive Surgery Symposium, International Society of Refractive Surgery, New Orleans, Louisiana, November 9, 2001.

Lumba JA, **Rojas MC**, Manche EE. PTK After LASIK for Anterior Basement Membrane Dystrophy. Presentation, Symposium on Cataract, IOL and Refractive Surgery, American Society of Cataract and Refractive Surgery, San Diego, California, May 2, 2001.

Rojas MC, Haw WW, Manche EE. LASIK Enhancement for Consecutive Hyperopia Following Myopic LASIK Overcorrection. Presentation, Fall World Refractive Surgery Symposium, International Society of Refractive Surgery, Dallas, Texas, October 20, 2000.
