

MASSENGALE EYE CARE

ALL ABOUT LASER VISION CORRECTION

1. Understanding How Your Eye Works

To decide whether laser vision correction (LVC) surgery is right for you, it is first important to understand how your eye works.

The primary purpose of the eye is to focus light on the retina. If light doesn't focus properly, contact lenses or glasses are used to properly focus the light rays on to the retina.

An eye works much like a camera. Light enters the eye through the cornea, travels through the pupil and the crystalline lens and is focused on the retina. Light that is not focused on the retina is called a refractive disorder, or refractive error. The retina changes the light into electrical impulses that travel to the brain where the image is interpreted.

REFRACTIVE DISORDERS

Refractive disorders affect how the eye focuses light on the retina. Light that is not properly focused on the retina causes blurred vision.

MYOPIA (Nearsightedness) is a refractive error resulting from the eye being either too long or the cornea being excessively steep. Images are blurred because they are focused in front of the retina. Nearsightedness causes you to see near objects better than those at distance.

HYPEROPIA (Farsightedness) is a refractive error resulting from the eye being either too short or the cornea being excessively flat. Images are blurred because they are focused behind the retina. Farsightedness causes you to see distance objects better than those at near.

ASTIGMATISM is a refractive error resulting from the refractive surfaces of the eye being aspherical, or "out of round". Most people who need corrective lenses have at least a small amount of astigmatism. Astigmatism causes objects at all distance to appear blurred.

PRESBYOPIA is a refractive error caused by the normal aging process of the eye. It is caused by the eyes diminishing ability to focus from distance to near. This usually occurs around age 40, creating the need to wear reading glasses or bifocals. It is important to understand that laser vision correction surgery has no affect on your focusing muscles and, therefore, cannot treat presbyopia. If you are around age 40 and have successful laser vision correction surgery that corrects your distance vision in both eyes, you will still need to use reading glasses to read. Monovision is a very successful technique used to overcome this need, by treating one eye to see primarily at distance and the other eye is treated to see primarily at near. If applicable in your case, Dr. Massengale will discuss this option at length with you before surgery.

2. Excimer Laser Refractive Surgery

The excimer laser is uniquely suited to the task of refractive corneal surgery. In refractive surgery, we are attempting to reshape the cornea so that rays of light that pass through it are focused clearly on the retina. This particular laser produces a cool beam of ultraviolet light (193 nm). The beam literally vaporizes tissue as it breaks carbon-to-carbon molecular bonds. Tissue is removed in a precise fashion on a microscopic level. Each pulse of the laser removes 0.25 microns of tissue, or 1/39 millionths of an inch. This allows the cornea to be gently and precisely re-sculpted into the desired shape.

There are different techniques or “types” of laser refractive surgery, but they are all very similar. The different techniques all result in the same outcome, although each has its own particular advantages and disadvantages.

Lasik (Laser Assisted in-Situ Keratomileusis)

Lasik is performed by cutting a button shaped flap of corneal tissue, which remains attached at a “hinge”. The flap is lifted back before the laser reshapes the exposed deeper tissue lying underneath the flap. This flap can be cut with a bladed instrument (microkeratome) or a second type of laser (IntraLase). After the laser reshapes the cornea, the flap is then replaced to its original position where it heals naturally and securely. This procedure takes longer because of the need to create the flap.

PRK (Photorefractive Keratectomy – also know as Anterior Surface Ablation)

PRK is a procedure where the cornea is sculpted directly on the surface. The eye is prepared by gently removing the superficial surface layer known as the “epithelium”. This epithelial layer regenerates itself within a few days, just like a scrap or cut on your skin. The “stroma”, which lies just underneath the epithelium, is the tissue actually sculpted by the laser. Less than 10% of the cornea is affected with the deeper layers remaining virtually untouched. The entire laser procedure takes less than a minute and is completely painless.

Following is a list of risks for problems associated with Laser Vision Correction:

Infection	1 in 5000
Pain	1 in 50
Night glare	2 – 5%
Haze	0.1%
Regression	5 - 50%
Over-correction	1 – 2%
Loss of visual sharpness	1%
Blindness	1 in 1 million

The following describes the differences between the two procedures. The greatest advantage for PRK is that it results in a thicker cornea than does Lasik. The greatest advantage for Lasik is that it allows a return to functional driving vision in less time than PRK.

	<u>PRK</u>	<u>LASIK</u>
Range of Correction	Low to moderate	Low to moderate
Treatment Depth	Surface	Beneath a 120 – 180 micron corneal flap
Intra-operative Pain	None	None
Post-operative Discomfort	Mild 3 – 5 days	Minimal 1 – 2 days
Post-operative Medications	2 – 12 weeks	1 – 2 weeks
Functional Vision Recovery	3 – 5 days	1 – 2 days
Visual Results Fully Recognized	1 – 4 weeks	1 – 4 weeks
Return to Work	4 – 7 days	2 – 3 days
Risk of Complications	Low Less surgeon dependant	Low More surgeon dependant
Risk of Corneal Scarring	1 – 2 %	< 1%

3. The Laser Vision Correction Experience

There will be three distinct parts to your laser vision correction experience:

The Evaluation Process
The Laser Procedure
Post-Operative Care

THE EVALUATION PROCESS

Before you proceed with laser vision correction, a thorough eye exam will be performed to determine if you are a candidate for laser correction. In general, you must be at least 18 years of age. Your vision must have been reasonably stable for at least a year, and you must be free from certain eye diseases. You should not be pregnant, nursing, or planning on becoming pregnant in the next 6 months and should be in good health. For contact lens wearers, we will provide you with a schedule for discontinuing your contact lens wear. In general, you should not wear soft contact lenses 2 weeks prior to your pre-operative examination. You should not wear hard or gas permeable lenses for at least 6 weeks, plus an additional week for each decade you've worn rigid gas permeable lenses. This timetable for discontinuation of gas permeable lenses is a minimum. After this amount of time, we must have at least two consecutive visits with no change in corneal shape and prescription.

During the evaluation process, your eyes will be carefully examined and you will be educated regarding all aspects of laser vision correction. It is vital for you to learn as much as you can about laser vision correction and have all your questions answered. This step is important in making an informed decision, and will help you understand what you can reasonably expect from the procedure.

After determining your candidacy and having a comprehensive pre-operative work up, our staff will schedule your procedure at the laser center. At this point you will have had your refraction (prescription) verified before and after pupil dilation, corneal thickness measurements will have been taken, and had a topographical mapping of your eye.

If your surgery is scheduled, you'll be given several prescriptions for eye medications to be taken before and/or after your surgery. Additional mapping and measurements may be taken at the laser center. After arriving for your procedure any additional questions will be answered so you will be completely prepared for your procedure and will know what to expect during and after your procedure. You will be given a mild sedative before the procedure.

THE LASER PROCEDURE

You should arrive at the laser center rested and relaxed approximately one (1) hour before your scheduled surgery time. Wear comfortable clothing, but **DO NOT WEAR MAKE-UP, PERFUME OR COLOGNE**, and expect to be at the center for about 2 hours. You will need to have someone drive you home after your procedure.

When you arrive at the center, completion of all consent forms will be verified and you will be asked for payment for your procedure.

TO BEGIN EACH PROCEDURE

Anesthetic (numbing) drops will be placed in your eyes several times over the ½ hour prior to your procedure. You will enter the laser suite, where you will lie down on the laser table so that your eye is directly beneath the laser. An eyelid speculum will be placed so that you cannot blink the surgery eye during the procedure.

PRK

Dr. Massengale will prepare the eye by removing the epithelial layer of the cornea. You may feel pressure but will experience no pain. You will then be asked to look at a red fixation light. The laser will begin and will be heard as a snapping sound. After the laser has stopped, a bandage contact lens, as well as antibiotic drops will be placed on the eye and the procedure will have been completed on that eye.

LASIK

The Surgeon will place a special device called a microkeratome on the eye, which will be activated in order to cut the stromal flap. During this process your vision will become dark. This happens because the pressure in the eye increases about 5 fold so that the eye is immobilized well enough to create a precise flap. The flap is removed, the laser then reshapes the stromal bed underneath the flap, and the flap is then returned to its normal position.

Conventional vs. Custom surgery

Conventional laser technology was the first type of laser refractive eye surgery performed. It involves feeding the laser's computer with your particular refractive error. The laser then calculates the amount of tissue to be removed from the cornea.

Custom laser technology is the newest technology for laser refractive surgery. It involves special equipment that measures your eye like a fingerprint, accounting for the small, but significant distortions affecting your vision. The laser's computer adjusts its treatment pulses in a "custom" pattern to not only change your prescription, but also to account for the distortions specific to each eye that contribute to blurred vision.

The majority of patients will end up with better vision with custom laser vision correction. However, custom surgery does not improve healing time or decrease the risks involved in the surgery.

POST-OPERATIVE CARE

Once your procedure is done, you will be able to go home almost immediately. You will be instructed on your medications and some "Do's and Don'ts".

After leaving the laser center you should go home and rest. Sleeping is the best way to accelerate the healing process. You probably will experience some discomfort and light sensitivity. This may last from a few hours to a few days. Pain medication will be prescribed as needed as well as drops to promote healing and prevent infection. You can expect your vision to be somewhat blurry for a few days to a few weeks. It is recommended that you not drive until Dr. Massengale tells you that your vision is good enough to safely do so. Wear good sunglasses, avoid rubbing your eyes, and avoid swimming or hot tubs for at least a week. Showers are fine, but avoid water running down your face where it can get into your eyes. Avoid dusty or smoke filled environments.

When you leave the laser center you will be given complete instructions to follow including a post-operative appointment schedule.

4. Enhancement Program

The following is the policy regarding enhancement surgeries at Omni Laser Center:

Conventional Surgery

The fee for “conventional” laser surgery is \$1299 per eye. In the event a re-treatment is necessary, enhancements are FREE for the first year following your procedure for each eye. Re-treatments after the first year will incur an additional fee of \$499 per eye.

Custom Surgery

The fee for wavefront “custom” laser surgery is \$1549 per eye. There are many advantages of custom surgery; which is called “CustomVue” with the VISX Excimer laser. The technology used in custom surgery is newer and typically results in fewer distortions and better vision than with conventional surgery. In the event a re-treatment is necessary, enhancements are FREE for the first year following your procedure for each eye. Re-treatments after the first year will incur an additional fee of \$499 per eye.

It is medically impossible to ensure patients a lifetime of perfect and unchanging vision. With each laser vision correction candidate, our goal is to achieve 20/30 or better unaided distance visual acuities (in a non-monovision corrected patient). If an eligible patient’s vision drops below this expectation during the first year, and the patient is clinically approved for re-treatment, there will be no fee incurred by the patient for the enhancement procedure. Re-treatments after the first year will incur a fee of \$499 per eye. Any re-treatment decisions are to be made jointly between the patient, surgeon and staff of Omni Laser Center.

Patients with prescriptions exceeding these requirements will be considered on a case-by-case basis. Eligible patients:

1. Will have been corrected to 20/30 or better with their initial treatment process, or
2. Will have been corrected to within 3 lines of their pre-treatment best corrected acuity.
3. Are required to follow the complete course of post-operative treatment, including all follow up visits requested by their primary care eye doctor for up to 6 months.
4. At the completion of the post-operative treatment period, the patient must maintain annual eye health and vision exams. (Note: This program is only valid with Omni Laser Center and Dr. Massengale.)

Re-treatment Exclusions:

Although the vast majority of patients requiring an enhancement will be eligible for re-treatment, there are guidelines and conditions under which additional refractive treatment

is not medically recommended. Ultimately, the decision for re-treatment will be reached cooperatively between the patient, surgeon and medical Staff at Omni Laser Center.

Retreatment exclusions are:

1. Patients with pre-operative myopia greater than -12.00 D (spherical equivalent)
2. Patients with pre-operative hyperopia greater than $+4.00$ D (spherical equivalent)
3. Patients with pre-operative astigmatism greater than -4.00 D.
4. Patients who fail to comply with post-operative guidelines.
5. Patients who fail to see a doctor at Massengale Eye Care for their yearly eye examinations, and if a re-treatment is considered, a subsequent follow-up with Dr. Massengale.
6. Patients whose loss of vision is a result of an accident or trauma to the eye.
7. Patients with diseases such as diabetes, active autoimmune or collagen vascular disorders.
8. Patients whose cornea is too thin for further treatment.
9. Patients whose vision is reduced due to irregular astigmatism.
10. Patients who underwent RK, ALK or any other refractive surgery prior to having LASIK or PRK at Omni Advanced Laser Center.
11. Patients whose initial PRK or LASIK was not performed at the Omni Laser Center.
12. Patients who develop an ocular disease such as (but not limited to) cataracts, glaucoma, diabetic retinopathy, retinal tear, detachment, or degeneration.
13. Patients seeking an enhancement as a result of developing presbyopia.

5. All about Dr. Massengale

Curt Massengale, O.D.

Dr. Massengale has provided primary eye care in Oklahoma for 23 years. He opened his first practice in Tulsa in August of 1984. He received valuable experience in working with difficult to fit prescriptions and diseased eyes in a practice limited to contact lenses. He moved to Oklahoma City and opened his present practice in Crossroads Mall in March of 1989. He opened his satellite office at Penn Square in 1998.

Dr. Massengale began performing Laser Vision Correction surgery in 1999. He was one of the first Optometrists in the nation to become certified to perform anterior surface ablation, also known as Photorefractive Keratectomy (PRK), and was the first to perform Lasek in the state of Oklahoma. He is proficient in Selective Laser Trabeculoplasty (SLT), and Nd:YAG laser surgery for post-surgical secondary cataracts and glaucoma. He has performed approximately 1,500 laser procedures. Dr. Massengale is board certified in several laser procedures, minor eye and eyelid surgical procedures, and the therapeutic treatment of eye disease. He has lectured to Optometrist from around the country on a variety of topics including cataract surgery post-operative care, glaucoma diagnosis and treatment, and prescribing oral medications.

He is a member of the International Society of Refractive Surgeons, the American Optometric Association, and the Oklahoma Association of Optometric Physicians. He received his doctorate in Optometry from NSU College of Optometry in 1984.

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Locations:

Crossroads Mall	7000 Crossroads Blvd.	Oklahoma City, OK	405-631-2020
Penn Square Mall	1901 N.W. Expressway	Oklahoma City, OK	405-767-2020

www.massengaleeyecare.com

6. FREQUENTLY ASKED QUESTIONS

Does laser vision correction hurt?

The actual laser procedure does not hurt. Anesthetic drops numb your eye before the procedure. Lasik may cause mild discomfort for the first day. PRK may produce discomfort for a few days.

Can you guarantee 20/20 vision?

As with any surgical procedure there are no guarantees. Although our results are very good (97% of patients no longer need glasses for driving), the results of your procedure depend on your prescription, your healing characteristics, and other individual factors. It is best to look at laser vision correction as a way of reducing your dependence on glasses or contacts.

Am I a good laser vision candidate?

You must be 18 years of age, not pregnant or nursing, no evidence of collagen vascular disease (rheumatoid arthritis, lupus, etc.) or any evidence of eye disease. Diabetics must be well controlled and your prescription must be stable. It is important that you have realistic expectations.

How long will the correction last?

Once your eye has stabilized, your correction is permanent. Any additional need for glasses after that would be the result of the normal aging process.

Can both eyes be treated at once?

Yes. Patients usually prefer to perform both procedures the same day for convenience. The most conservative approach is to have each eye done on different days. You will be able to function normally with the untreated eye while the first eye is healing and you will be able to assess whether the procedure meets your expectations before having the second eye done. It is possible to benefit by learning about minor modifications that can be used on the second eye. The advantage of having both eyes done simultaneously is the convenience of both surgeries at one time. The normal "balance" in vision with both eyes is achieved sooner. The doctor can discuss the advantages and disadvantages of both options.

What is monovision?

If you are around age 40, once your distance vision is clear, it is normal to need either reading glasses or bifocals to see clearly at near. One option is to correct your dominant eye for distance and the other eye for near. This is called monovision. The majority of contact lens wearers in this age group wear monovision contact lenses to keep from having to wear reading glasses. This technique is much more successful than bifocal contact lenses on most patients. For those patients over 40 who decline this option, reading glasses are a must. This can be tested with contact lenses on you before performing it surgically.

What is the difference between PRK and Lasik?

Both procedures use the excimer laser to reshape the cornea to correct for nearsightedness, farsightedness and astigmatism. PRK reshapes the very front surface of the cornea and Lasik reshapes the cornea underneath a flap of corneal tissue. Several studies have shown that results after the first month are the

same. Visual recovery time is shorter with Lasik but risks are less with PRK. Additionally, eye drops are necessary for a longer period of time with PRK.

When can I see to drive?

With Lasik you can usually see to drive within 1 – 3 days. With PRK you will probably need 3 – 7 days. The doctor will advise you as to when you see well enough to drive.

When can I see to WORK?

The time necessary to return to work is generally the same as the time for returning to drive.

Can I still wear contact lenses after surgery?

In the unlikely event you have a noticeable refractive error after surgery and you choose not to have an enhancement, you will be able to wear contact lenses as you did before surgery.

What does laser vision correction surgery cost?

Our fees for surgery are:

PRK Conventional	\$1299
PRK Custom	\$1549
Lasik Conventional	\$1599
Lasik Custom	\$1799

This fee includes your surgery, protective sunglasses, follow up care for one full year and any necessary enhancements for that year. You will need to purchase some additional eye medications and oral pain medication. Financing is available.

Can I finance the surgery fee?

Yes. Financing is available for as low as \$59 per month (per eye) from a reputable company. Ask our staff for details.

7. The Laser Center

Omni Laser Center

We perform our laser procedures at Omni Laser Center in Edmond.... 1333 W. 33rd Street

Laser Technology: VISX Excimer Laser

The VISX Star laser system has long been considered the industry leader in excimer laser technology. It uses a tracking system with Iris fixation to ensure a centered ablation and eliminates small movements you may make during the procedure. This laser platform and eye tracking device provides superior results for a wide range of refractive errors to provide safe, accurate and predictable treatment results.

8. Next Steps

Following are the steps necessary in preparation for Laser Vision Correction Surgery:

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| 1. Discontinue your contact lens wear | Specific duration depends on the type of lenses you wear, duration of wear and corneal health. Usually 1 – 2 weeks for soft lenses and 1 – 3 months for gas permeables. |
| 2. Schedule a routine eye examination | Includes refraction, eye health examination, pachymetry, corneal maps, and laser consult. |
| 3. Let us know the date(s) you are available for surgery | |
| 4. Choose between custom vs. conventional surgery. | This will be discussed at your laser consultation. |
| 5. Decide on your payment option | One time payment or finance. |

WE LOOK FORWARD TO WORKING WITH YOU !

Curt Massengale, O.D.

MASSENDALE EYE CARE
ADVANCED MEDICAL & SURGICAL EYE CARE

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