

CCCL

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Crosslinking

Crosslinking is a method to mechanically stabilize tissue. It has been established in other fields like Orthopedics, ear, nose and throat medicine and cardio surgery. Crosslinking has been used in Ophthalmology since the late 1990's for the treatment of keratoconus. Furthermore, it is highly effective for treating chronic infections of the cornea.

The optical system of the eye

The cornea is the transparent front part of the eye that covers the iris, pupil, and anterior chamber. It accounts for approximately two-thirds of the eye's total optical power. Due to that fact even small alterations of the cornea affect the sight significantly

The Cornea

The cornea is a layered structure consisting of regularly arranged collagen fibers. Collagen is the main component of any connective tissue in the human body.

The arranged collagen fibrils are vital for the stability and the transparency of the cornea. Comparable to a wire rope on a bridge, they connect the cornea to its surroundings. If this structure is irregular, the cornea gets instable and the vision progressively decreases.

Keratoconus

Keratoconus is a disease that causes a progressive loss of stability of the cornea. It mostly occurs on both eyes and 40.000 people are affected only in Germany. There are two different types of keratoconus, the »Forme-Fruste« Keratoconus and the progressive keratoconus.

THE SMALLEST CHANGES ON THE CORNEA MAY AFFECT YOUR VISION

The »Forme-Fruste« is the most common type of keratoconus. It is mostly stable and does not progress significantly over time. The ametropia caused by it can be corrected with glasses or contact lenses.

The »Forme-Fruste« Keratoconus therefore does not cause severe issues for the patient. Nevertheless an eye exam should be performed on a regular basis.

In the progressive type of keratoconus the vision decreases over the years. In general it occurs in patients between 15 and 30 years of age. The cornea progressively gets thinner, bulges out and the curvature becomes irregular. The vision gets blurred and the quality deteriorates more and more.

Additionally, double vision, increased light sensitivity and bad night vision can occur. The correction of ame-



CORNEAL CROSSLINKING

tropia with glasses may already be inadequate during early stages of progressive keratoconus. Rigid contact lenses are beneficial at this stage, because they smooth out the surface of the cornea and therefore improve the vision.

At a certain stage of keratoconus the high irregularity of the cornea causes a loss in vision that even custom-fitted rigid contact lenses can't improve sufficiently. If the cornea is too irregular, contact lenses may not be used anymore. In this case a corneal transplant might become necessary.

Corneal Crosslinking (CCL)

Corneal Crosslinking is a method that can stop the progression of keratoconus. The goal is to stabilize the cornea by creating new crosslinks between the collagen fibers of the corneal lamellae.

Before the procedure

During an ophthalmologic examination the cornea is precisely analyzed. The analysis is conducted with help of our most advanced technology, the WaveLight Oculyzer and the WaveLight Topolyzer.

The anterior and posterior corneal surface will be measured and the corneal thickness will be detected.

The treatment

Primarily, the cornea will be completely numbed with the use of eye drops. The entire procedure is absolutely pain free.

During the first step, a 0.05 mm layer of the cornea, the epithelium, is partially removed. In order to make the treatment more effective, this first step is necessary to reach the lamellae directly in the corneal stroma.

Afterwards Riboflavin (vitamin B2) eye drops will be instilled for 30 minutes in a two minute interval. These eye drops will give the cornea a yellow tint for some hours. After the 30 minutes the tissue will be able to fully absorb the following UV-radiation treatment which is applied in a specific wavelength.

During the first 30 minutes new cross links are already developing between the collagen fibers and the corneal lamellae: Your cornea begins to stabilize immediately.

THE CCL TREATMENT PREVENTS THE PROGRESSION OF KERATOCONUS

After one last checkup by your ophthalmologist we put a bandage contact lens on the treated eye for the next couple of days. If both eyes need to be treated, the second procedure will be scheduled two weeks later.

After the procedure

Due to the removal of the epithelium, your eye will generally feel scratchy and painful for about two days. In order to relieve the discomfort, we will provide you with pain-relieving eye drops as well as pain-relieving medicine.

During the first two weeks you will need to use antibiotic as well as anti-inflammatory eye drops on a regular basis. We will provide you with an individual dropping schedule.

CORNEAL CROSSLINKING WILL INCREASE THE STABILITY OF THE CORNEA

Initially your eyes may feel dry and there might be some foreign body sensation. But the use of artificial tears will help you in this period.

The treated eye may also be red for up to two weeks. Additionally it is possible that your vision is blurry and that your eyes are more sensitive to light than before the procedure. But we can assure you, that this condition is only temporary.

After your eyes have healed completely, your vision will be as good as before the procedure or even better.

Frequently asked questions

Is the UV-Radiation harmful for my eyes?

No. We use riboflavin as a protective shield which absorbs the radiation. The intensity of radiation that actually reaches the eye is very low and therefore is harmless for the eye.

Will my vision be better after this treatment?

The primary goal of this procedure is to stabilize the cornea and not to treat ametropia. However, there have been studies, which showed that the irregularity of the cornea is slightly improved. Consequently your ametropia may decrease and your vision may improve.

How many treatments are necessary?

The desired stability is generally reached after the first treatment. But the procedure can be repeated if necessary.

How much does the procedure cost?

The procedure costs 690 Euro per eye.

Are the costs covered by my health insurance?

Some health insurance providers will reimburse the costs for this procedure.

We would advise you to turn in a quote before the procedure, to find out if this treatment is covered by your health insurance.

For further questions: Phone (0221) 86016-22,
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