

## WHAT IS THE OCULAR SURFACE?

The ocular surface is the most anterior part of the eye, the part we see when we look at another person.

The ocular surface consists of a series of ocular structures that work together and are essential for good vision. These are the tear glands (responsible for tear formation), the eyelids (responsible for distributing tears and protecting the eye from external agents), the conjunctiva (special skin of the eye that covers the white part where there are glands whose secretion is part of the tear) and the cornea (the transparent structure in front of the pupil and many colored iris)

## WHY DOES THE EYE GO RED?

Red eye is a response to irritants. It can be due to many causes and in some it is important to resolve them urgently.

Cases of red eye with loss of vision and intense pain should be evaluated by an ophthalmologist immediately.

Common causes of red eye are as follows:

- **Dry eyes** are the main cause of red eye and discomfort.
- **Conjunctivitis** is an uncomfortable inflammatory process that usually produces red eyes, sticky secretions that form crusts, so much so that that the eyelids can get stuck together. There are many forms of conjunctivitis, some infectious, so if you suspect that you or your child has conjunctivitis, it is advisable to go to a professional to assess the situation and prescribe the appropriate treatment. Conjunctivitis can be contagious so hygienic measures such as using different towels and sheets should be adopted so as not to infect other family members, we can even adopt such measures ourselves, with the aim of not passing the conjunctivitis from one eye to the other. Other measure such as frequent hand washing, cleaning the affected area with care, getting rid of all products that have come in contact with the eyes like make-up, etc. are all useful.
- **Keratitis** is a condition characterised by lesions on the cornea due to multiple causes such as dry eyes, herpes, excessive use of contact lenses and so on. The eye turns very red and watery but unlike conjunctivitis, it hurts a lot and is hypersensitive to light. It is important to go to the ophthalmologist to start the appropriate treatment promptly since in some cases it could produce irreversible damage to the cornea and thus result in permanently impaired vision.
- **Uveitis** is inflammation of the uvea (a structure of the eye with large number of blood vessels). It produces decreased vision, pain with light and red eye, but no discharge or crusting. The causes are very varied and include: idiopathic (without known cause), inflammatory, infectious and so on.

There are other eye diseases that produce red eye, less frequent but no less important.

If there is any pain or loss of vision, it is advisable to consult a specialist.

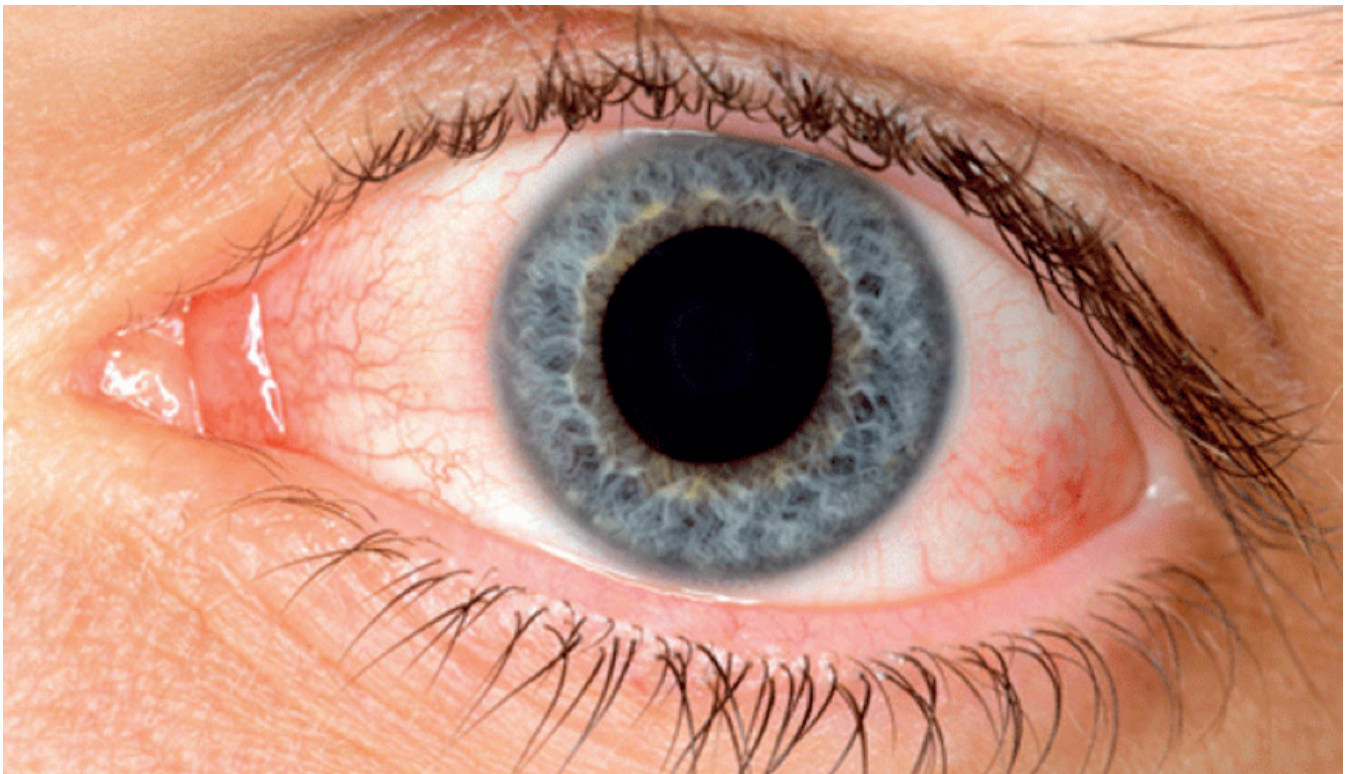


## WHAT IS DRY EYE SYNDROME?

Dry eye syndrome is a chronic condition resulting from alterations in the ocular surface and affects the quality of life of many people.

Approximately 60% of the population present with this kind of alteration, those who work in air conditioned environments in front of computer screens or that have to remain concentrated for long periods in near vision tasks being the worst affected .

The patient may notice stinging, itching, burning eyes, pain, redness, a gritty sensation, discharge and paradoxically, constant watery eyes.



The factors that most frequently lead to dry eye syndrome are mainly age, hormonal alterations such as those postmenopause, some drugs or autoimmune diseases.

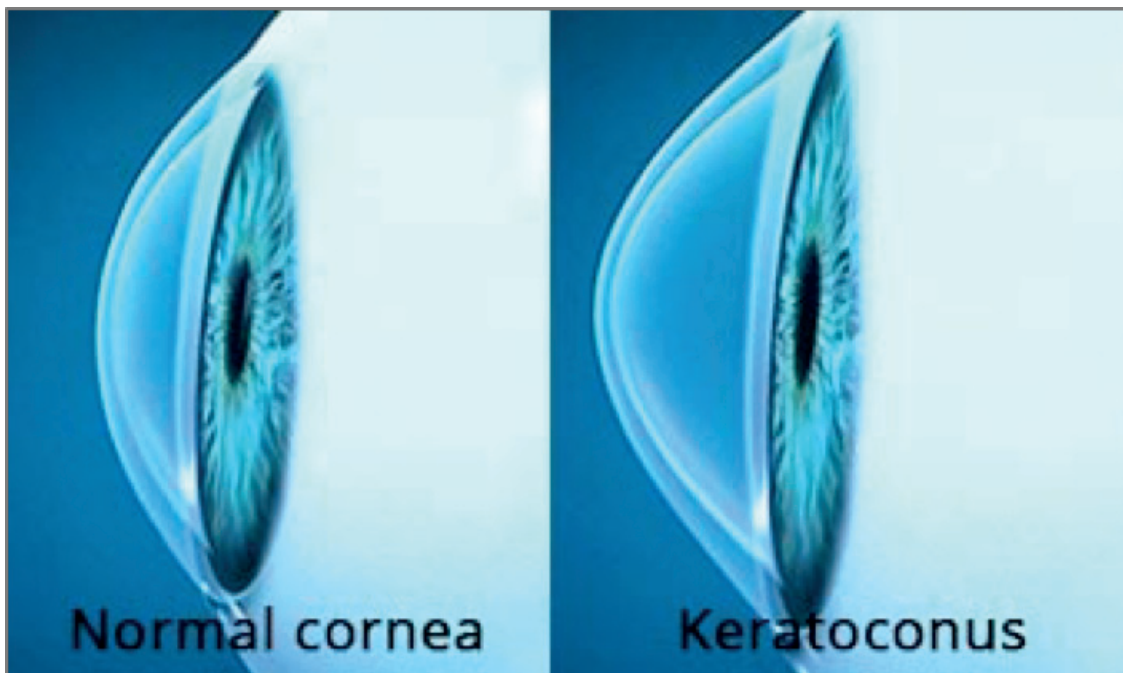
There is currently no curative treatment for the condition, but its symptoms can be alleviated by using lacrimal replacements (artificial tears) to keep the eye surface moisturized, anti-inflammatory eye drops to minimize inflammation and discomfort, autologous serum (serum made with the patient's own blood) and for severe cases, punctal plugs (blocking the drains where tears normally go), contact lenses or in extreme cases with complications patients may even require surgical intervention.

Consistency in the treatment is important because if left untreated the symptoms will return, that is the reason why it is recommended to use artificial tears daily to lubricate and to take care of the eye, much in the way of using moisturizing cream for your face or hands or cleaning your teeth daily .

## WHAT IS KERATOCONUS OR CORNEAL ECTASIAS?

The cornea, a transparent structure located in the most anterior part of the eye, acts as a lens allowing a clear view of the environment. Its shape is slightly rounded, similar to a rugby ball.

Sometimes its curvature tends to increase, adopting the shape of a cone or a globe; that is to say, a deformation and progressive thinning of its thickness that results in alterations of graduation and poor visual quality that cannot be compensated with glasses or contact lenses.



The exact mechanism by which this progressive deformation occurs is not fully known, but a risk factor that is related and that we can avoid is the rubbing of the eyes. Rubbing the eyes can trigger or aggravate the condition.

An ophthalmologic examination with visual acuity measurement, examination of the anterior part of the eye with a slit lamp and technological devices such as corneal topography or OCT for the early detection, monitoring and evolution of corneal changes are necessary for diagnosis.

The treatment for mild cases is the use of semi-rigid contact lenses. At present for progressive cases, an activated substance (riboflavin) with ultraviolet light can be applied to harden the cornea and slow the progression of the deformation, also some rings are placed inside the cornea (intraestromal rings) to diminish the bulge.

In very severe cases, with very thin corneas and with severe lesions, corneal transplantation is indicated.

## ● CORNEAL TRANSPLANTATION: WHAT IT IS, WHEN IT IS NEEDED, AND TYPES

The cornea is a transparent structure.

This allows the free passage of light, resulting in clear and sharp vision.

In some eye diseases and/or after trauma, there is a loss of transparency of the cornea, which prevents patients seeing clearly. When this situation is severe, the treatment to recover vision is to perform a corneal transplant. That is, to replace the altered cornea of the patient with a new cornea from a donor.

<https://www.youtube.com/watch?v=kTlaJQebSh4>

At present, transplants are performed on the whole thickness of the cornea, that is, the entire cornea is replaced, as particular layers (lamella). So-called lamellar transplants differ in that only the affected layer is replaced, keeping the rest of the healthy cornea. This type of transplantation improves posterior visual quality and decreases the risk of rejection of grafted tissue.

As in any type of transplant there is risk of rejection, although it is much smaller than that of any other tissue or organ.

## ● WHAT RESEARCH IS GIMSO DOING IN OCULAR SURFACE?

The research group Miguel Servet Ophthalmology has been active for more than 15 years in the study of eye diseases and in the prevention of blindness.

In this long journey, different aspects related to diseases of the ocular surface have been studied.

Pharmaceutical research on ocular surface diseases is done through clinical trials.

It focuses on improving these drugs, both the molecule of the active principle and the composition of the drug.

GIMSO actively participates in different clinical trials aimed at the treatment of dry eye or hypersensitivity (allergies) to eye drop preservatives.

Corneal transplantation has evolved considerably in recent years, with the emergence of new partial exchange techniques in which GIMSO strives to improve.