DRY EYE

THE IMPACT OF DRY-EYE ON *CATARACT* AND *REFRACTIVE SURGERY*

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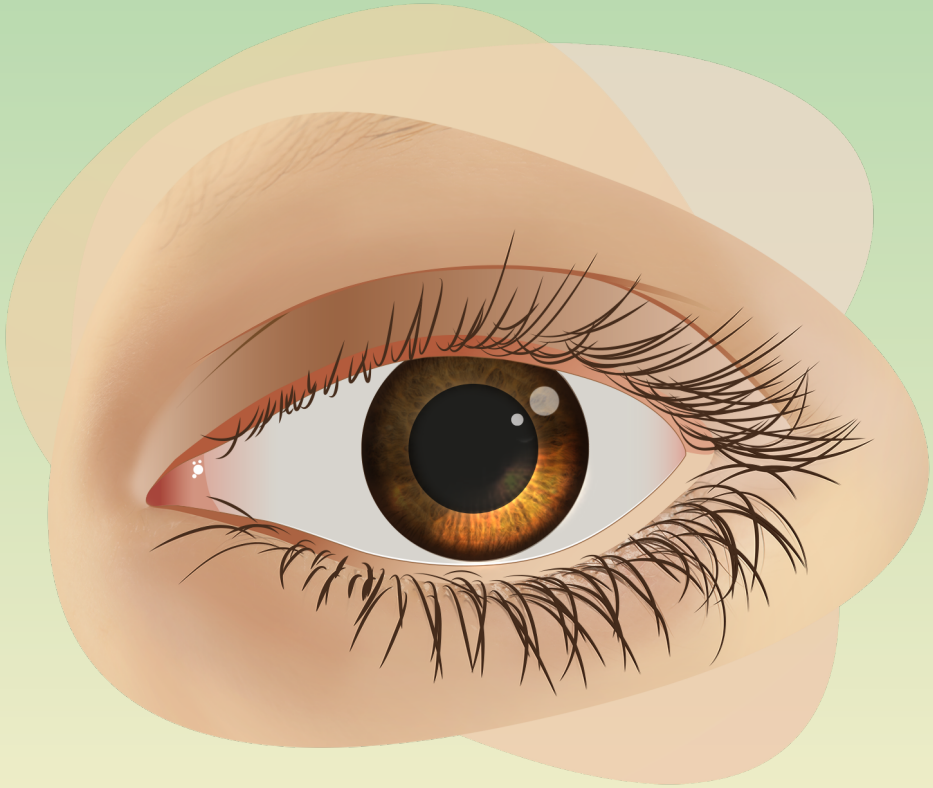
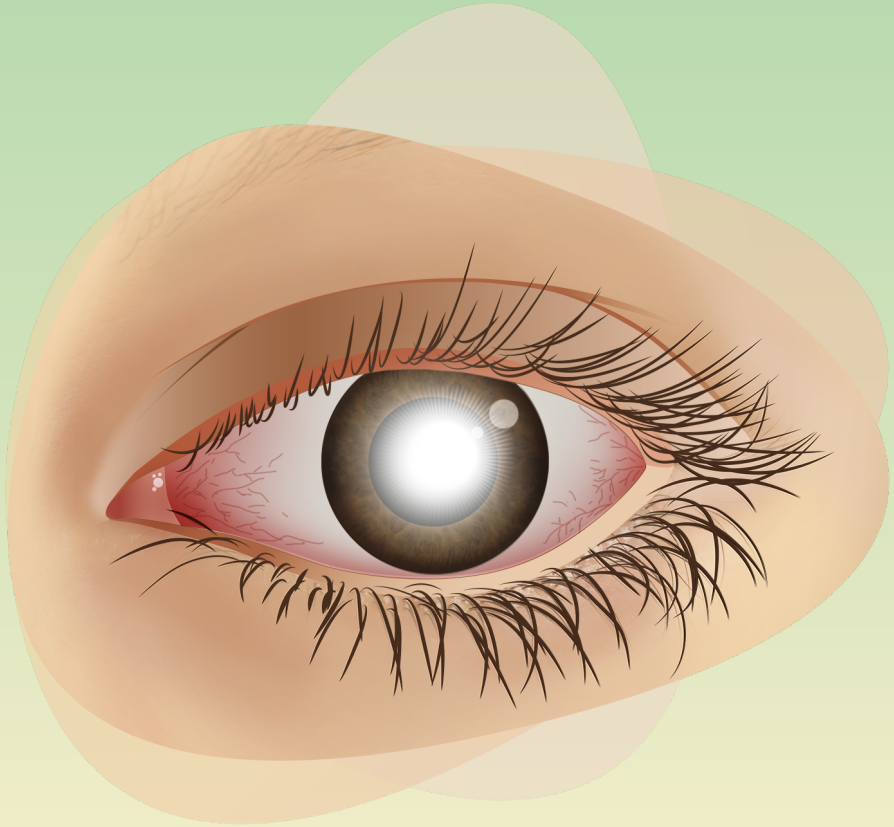
DRY-EYE SYNDROME AND PREMIUM IOL

The health of the ocular surface is important to the success of lens technology.

An evaluation of the ocular surface is one of the most important exams of preoperative routine for any patient who is considering a premium IOL implant.



Healthy eyes



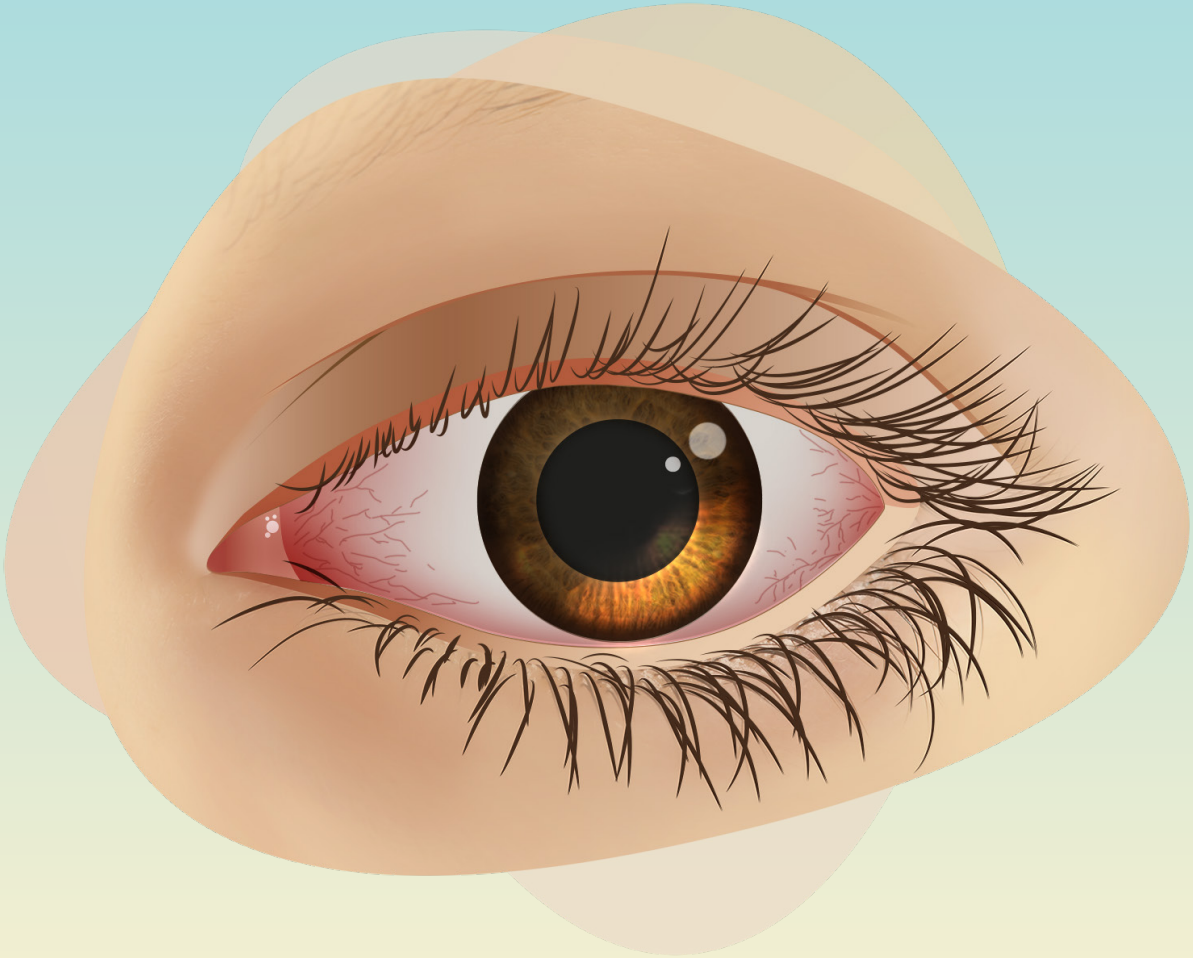
Cataract

DRY-EYE CAN SIGNIFICANTLY COMPROMISE PATIENTS' QUALITY OF VISION, EVEN AFTER ROUTINE CATARACT SURGERY

With a multifocal IOL, problems related to dry eyes are magnified by the inherent decrease in contrast sensitivity with this type of lens.

Although we often talk about dry-eye in the context of LASIK, cataract surgery is even more commonly associated with this pathology.

According to a recent report, well over half the patients undergoing cataract surgery experienced significant postoperative dry-eye feelings.



Because cataract surgery is incisional and most cataract patients are older, there is almost always going to be a general worsening of dry-eye Syndrome after cataract surgery.

In addition, elderly patients are more sensitive to the medications that are given during cataract surgery, particularly nonsteroidal anti-inflammatory drugs, which can also damage the ocular surface. Dry-eye Syndrome is very common in this patient population.

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THE REASONS FOR DRY-EYE SYMTOMS AFTER CATARACT SURGERY

There are a number of reasons to expect a dry-eye feeling after cataract surgery.

The cataract surgery patient population is older and has a higher probability of preoperative dry-eye than younger patients.

Furthermore, multifocal IOL patients, are generally active and may frequently engage in situations that contribute to ocular dryness (e.g., computer use, outdoor activities).

Another reason why a patient may develop dry-eye is that their pre- and postoperative medications contain mostly preservative agents.

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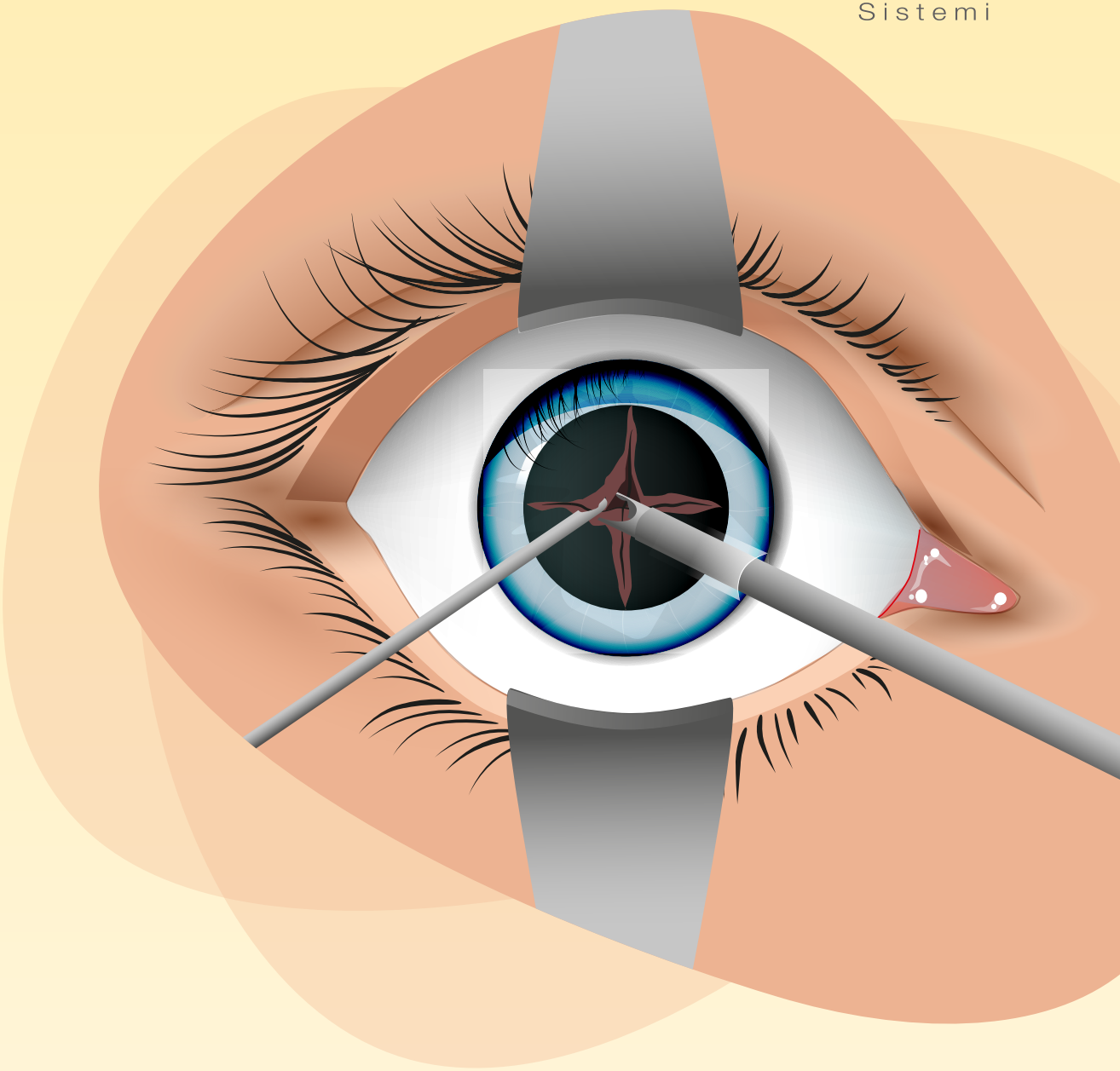
CATARAT SURGERY

In addition to the cataract incision, there may be slightly toxic compounds that damage the ocular surface, especially the goblet cells.

Many patients will have limbal relaxing incisions in the periphery of the cornea where the corneal nerves enter the eye, also corneal anaesthesia and dry-eye may have a significant effect.

Furthermore, with a multifocal IOL, there might be a 5 to 10 excimer laser enhancement rate (the risk of dry-eye disease increases from multiple surgeries).

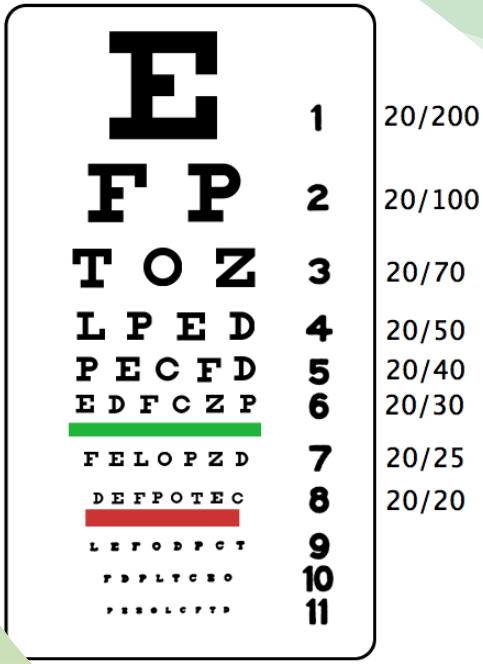


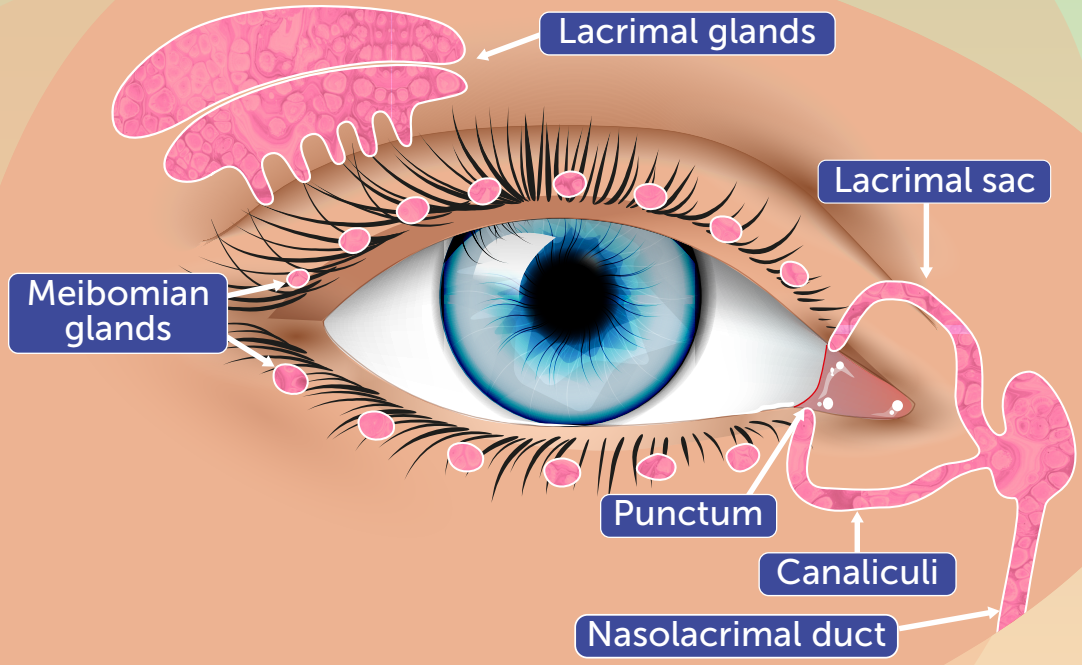
PREOPERATIVE EVALUATION

During preoperative evaluation of patients considering cataract surgery, the first step is to review thoroughly the patients' ocular history, including contact lens intolerance, foreign body sensation, grittiness, and a record of ocular symptoms that might worsen later in the day.

The most important indication is fluctuating visual acuity, which almost always suggests an ocular surface disease.

When a potential patient complains any of the aforementioned warning signs, it is necessary to execute a complete exam for dry-eye syndrome.





It is also necessary to observe the tear meniscus and the corneal and conjunctival epithelium (for hyperaemia, redundant conjunctiva, etc.) to assist the diagnosis.

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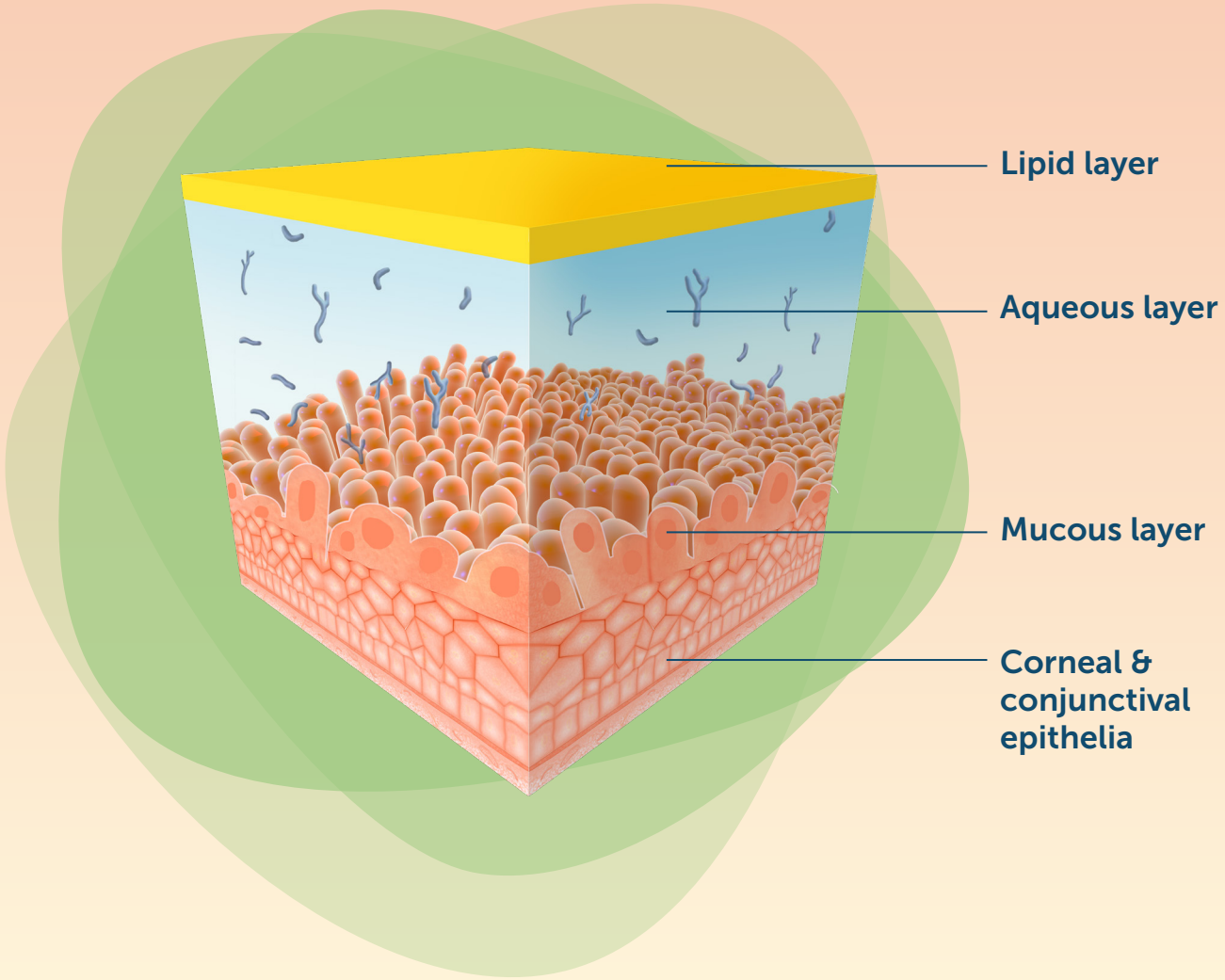
TEAR FILM QUALITY

is the most important factor to achieve high-quality visual outcomes in refractive and cataract surgery, thus its assessment and management is a cornerstone to deliver the excellent visual results the patients expect.



LARGE OPTICAL ABERRATIONS

Dry-eye patients are more likely to have large optical aberrations than those with a normal tear film, this can lead to **inaccurate intraocular lens** calculations, increasing the risk of postoperative complications or infection.

Glasses

Glasses from afar

Glasses with progressive lenses

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POST-CATARACT SYMPTOMS

Undiagnosed dry-eye, one of the main syndromes of the ocular surface disease (OSD), may worsen after surgery.

Cataract surgery itself may also induce or worsen dry-eye disease. It has been reported that **3% to 33% of patients with cataracts have OSD.**

Leave them untreated may affect the postoperative vision outcomes and reduce patient's satisfaction after a successful surgery.

Virtually, all patients who have corneal refractive surgery have dry-eye symptoms after the procedure, and **10% to 30% will have persistent dry-eye feelings after LASIK treatment.**

PATIENT SATISFACTION

Therefore, to achieve patient satisfaction it is important to take the necessary steps to identify dryness and use effective treatment strategies before performing preoperative measurements or surgery.

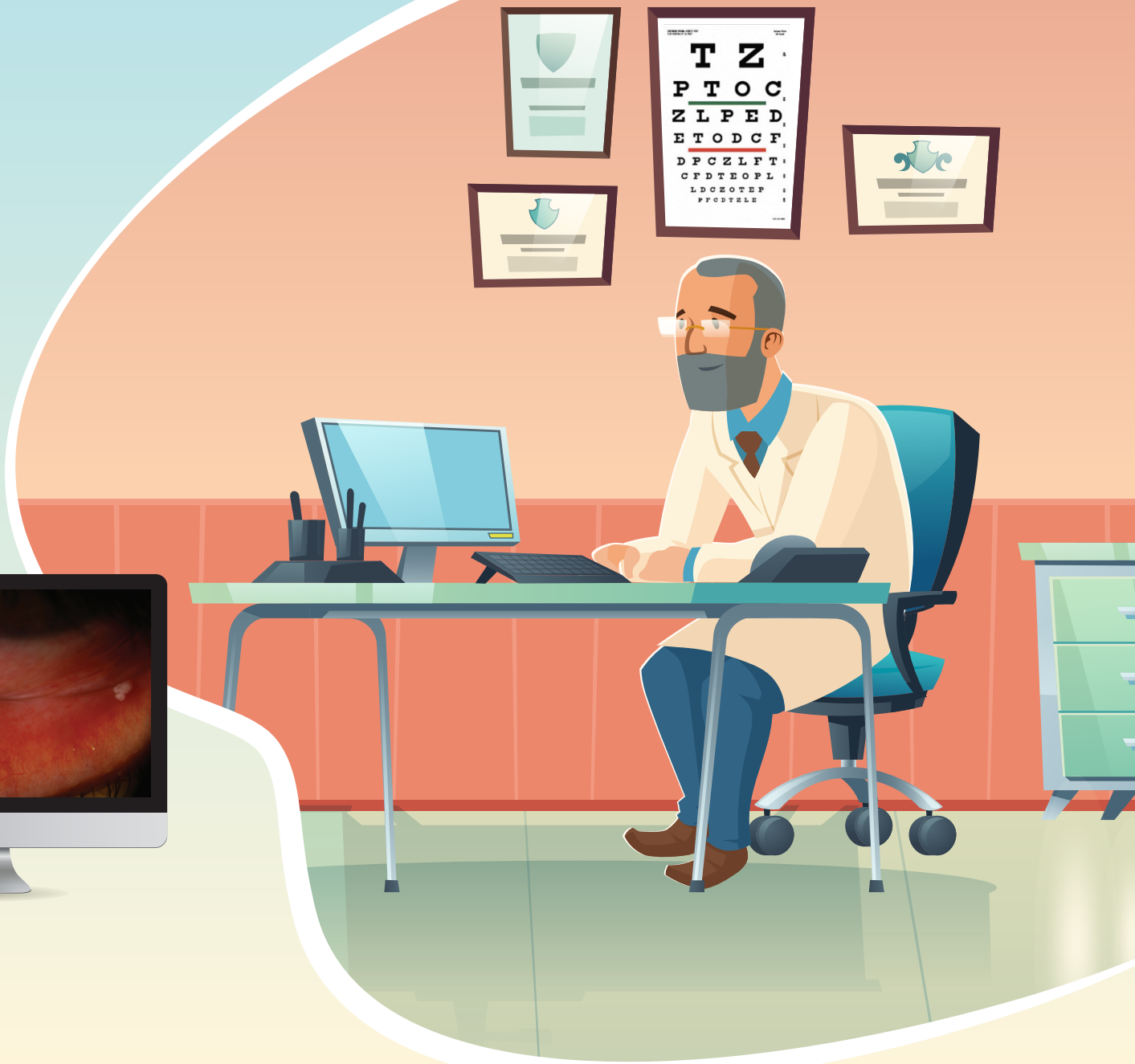
Because many patients with an unstable tear film are asymptomatic or have less obvious dry-eye, surgeons must perform different preoperative measurements to check for any discrepancies and image stability.

DIAGNOSTICS

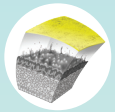
Ophthalmologists have a range of available tools to help them detect OSD and identify its origin.

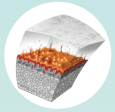
Traditional diagnostics include external examination, Meibography, conjunctival and corneal staining, and tear breakup time (TBUT), in particular the Interferometry evaluation.

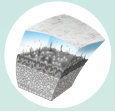
In addition, surgeons should examine the eye for lid parallel conjunctival folds, a sign of severe dry-eye.



“IDRA” THE ONLY FULLY AUTOMATIC DIAGNOSTIC TOOL


INTERFEROMETRY


TEAR MENISCUS


NIBUT


MEIBOGRAPHY


BLEPHARITIS


OCULAR REDNESS CLASSIFICATION


PUPILLOMETRY


WHITE TO WHITE MEASUREMENT


ANTERIOR SEGMENT IMAGING

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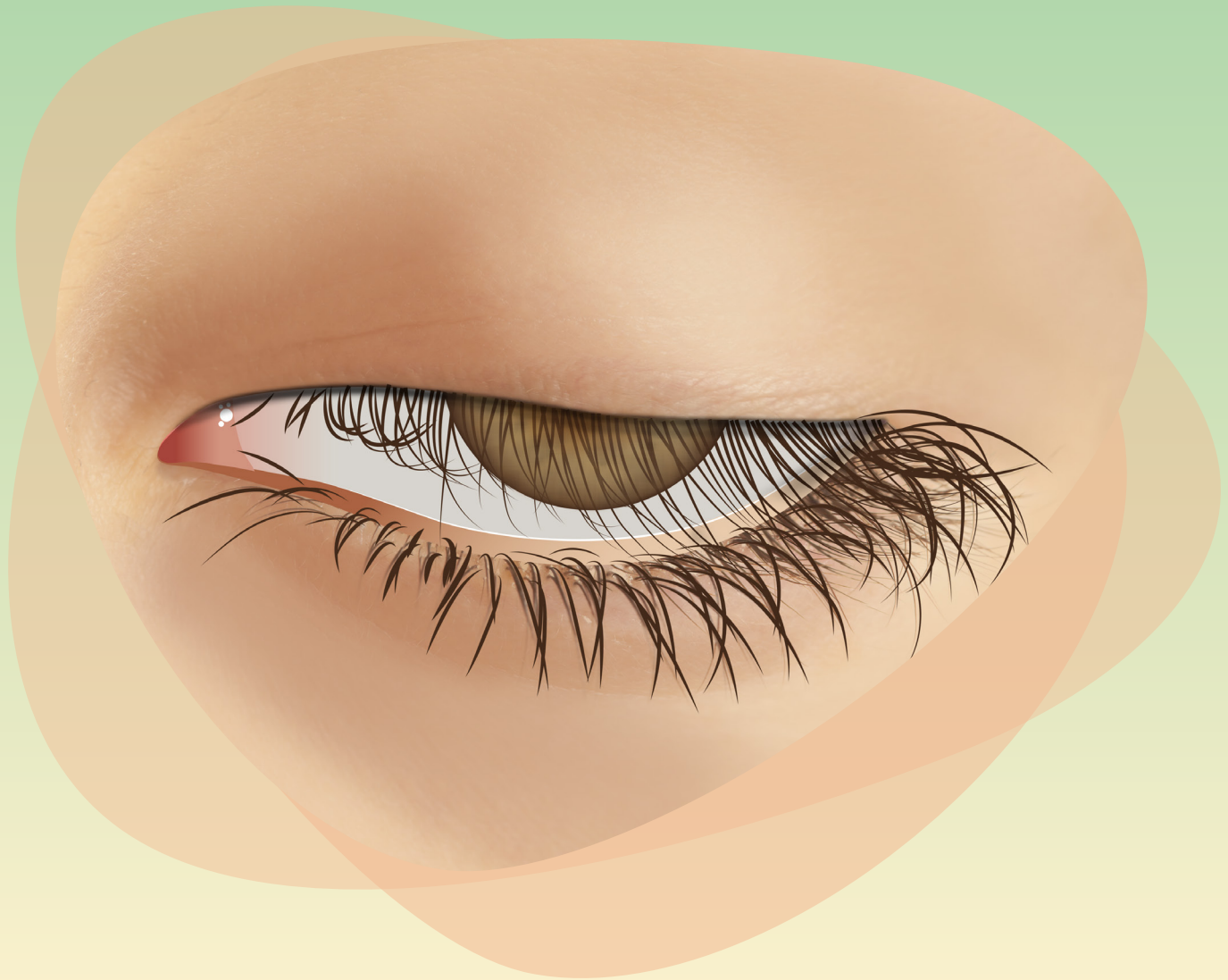
THE FIRST STEP IS TO NOTE PATIENTS' BLINK FREQUENCY

Often older patients do not blink regularly, particularly if they have Parkinson's disease or are receiving psychopharmacological treatment for psychosis or depression.

Symptoms such as foreign body sensation, tearing, and redness are also present in other common pathologies, thus it is important to discard hypersensitivity or infectious conjunctivitis.



MEIBOMIAN GLAND DISEASE (MGD)

MGD impacts patients' tear film stability. Clinical signs of MGD include irregular lid margin, lid margin thickening, and meibomian gland orifice pouting.

The **TBUT** and **Interferometry** are two of the most useful tests to assess tear film function. It is recommended to perform it before any other examination.

Other tests may identify anatomical, biological and structural changes, such as tear osmolarity, tear volume, MMP-9, and tear production. To standardize the procedure, ophthalmologists should always use the same light intensity. The functional status of the tear film influences whether the patient has good, intermediate, or poor vision.

The Report of the Definition and Classification Subcommittee of the International Dry-Eye Workshop **defined tear hyperosmolarity and tear film instability as the causes of dry eye.**

PRE-OPERATIVE STEPS

When patients with cataract issues present themselves, surgeons are focused on planning the surgical procedure and often dry-eye symptoms are overlooked.

Many patients complain that their eyes are still stinging and burning. It is important to preoperatively assess patients for concurrent problems, especially dry-eye. If they have moderate to severe dry eye, the dry-eye needs to be addressed preoperatively.

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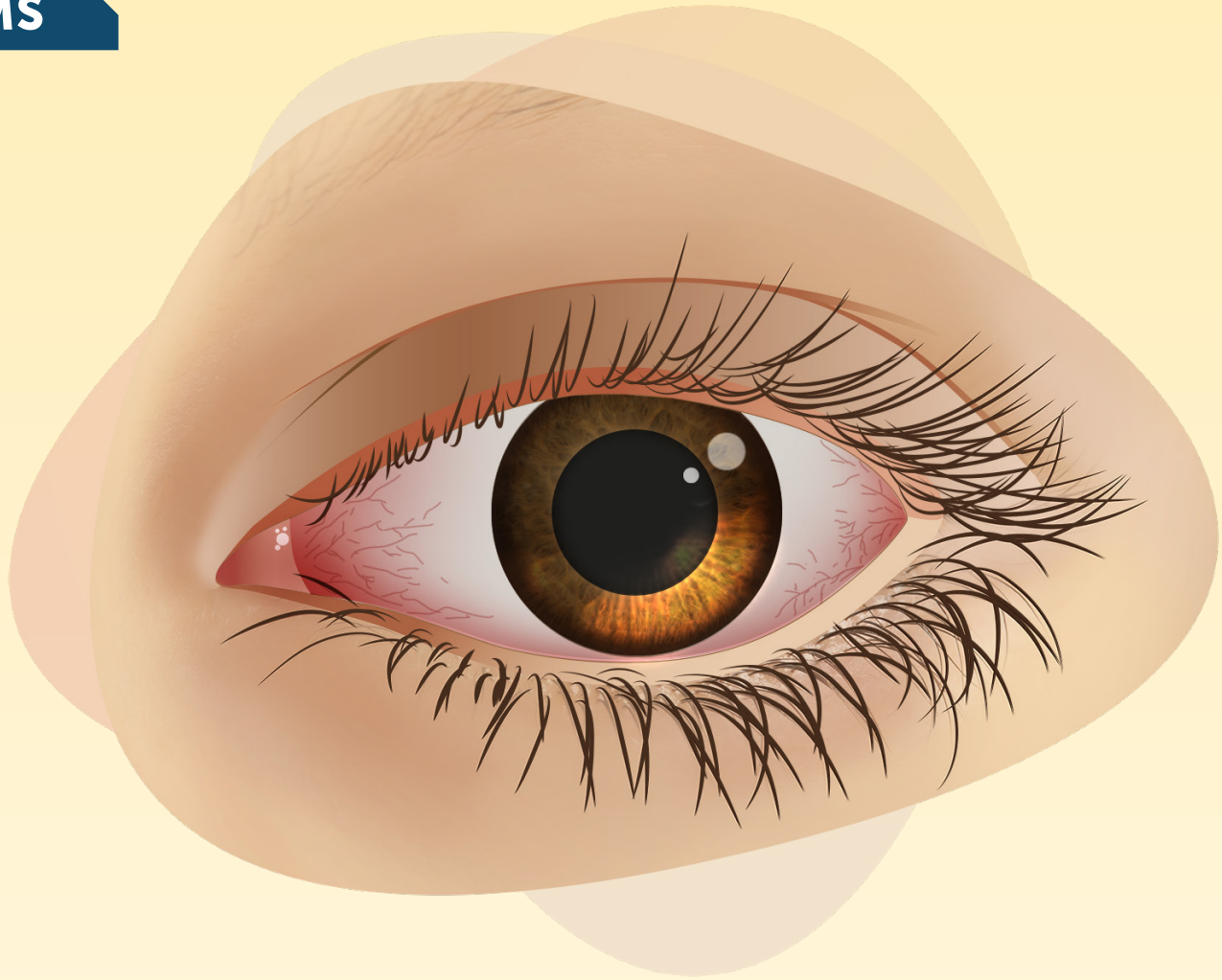
POST-OPERATIVE SYMPTOMS

A recent study conducted by Cal Roberts, MD, and Eleanor Elie, RPN, found that a clinically significant proportion of patients' report experiencing at least some dry-eye symptoms after cataract surgery.



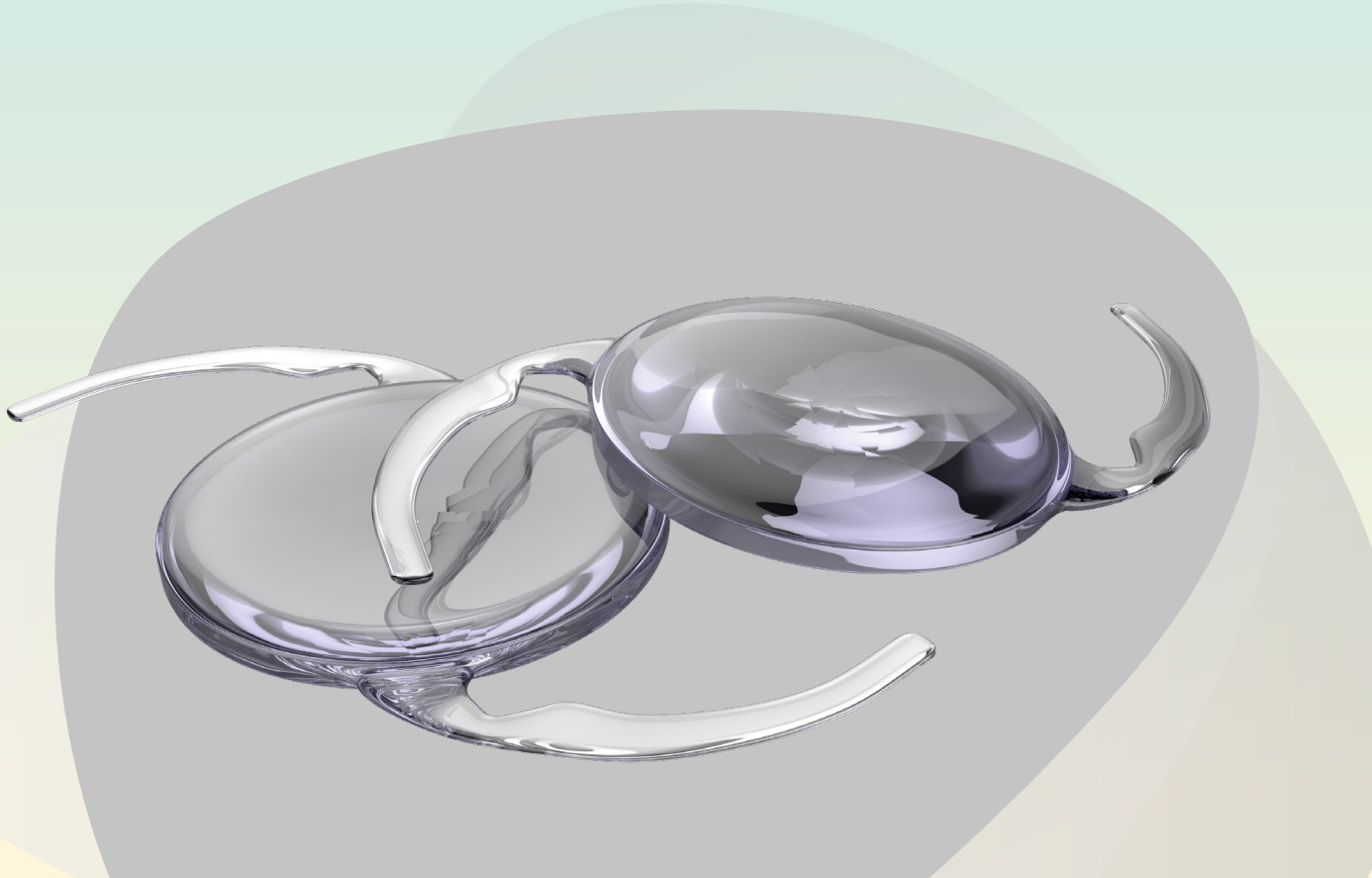
PRESBYOPIA-CORRECTIONG IOL

Dry-eye symptoms can be particularly problematic for patients with multifocal intraocular lenses.

These patients are paying additionally for their cataract surgery and are therefore expecting a smoother visual recovery and a better visual result.

When patients do not achieve the expected outcome with these lenses, surgeons sometimes blame it on the brand of lens. One of the most unrecognized causes of patient dissatisfaction following presbyopic IOL surgery is a dry-eye syndrome.

The difference in quality of vision may be the difference between a happy patient and an unhappy one. For this reason, we are recommending that Restasis be used in patients over 60 who are receiving a multifocal IOL.



CONCLUSION

Although the outlined measures may sound like a lot of work, they are a worthwhile investment in the postoperative outcome. A healthy ocular surface gives whatever lens technology we use, the best chance of success.

By addressing dry eye proactively, we help our cataract/IOL patients to see better, faster and with less discomfort after surgery. It's also helpful to discuss and explain the patient, before the operation, their dry-eye status.

This conversation lets patients know that they can help to ensure the best possible surgical outcome. The resulting "wow effect" and patients' high level of satisfaction build referrals for the doctor's practice.

Improving visual acuity and quality starts with optimizing the tear film, as improvements in refractive and cataract surgery have raised patients' expectations, it is important to address their ocular surface disease preoperatively in order to improve their visual outcomes after IOL surgery.

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