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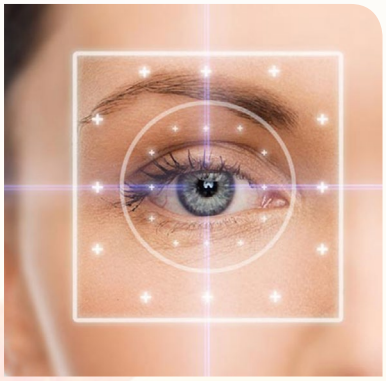
Dr. John McCann, MD, PhD / Center for Facial Appearances

NEWSLETTER

The FUTURE of Thyroid Eye Disease



Thyroid Eye disease (TED) is a disorder often associated with Graves' disease. This autoimmune disease may attack the thyroid gland causing thyroid hormone levels to be too high or too low. The same disease may also attack the eye socket causing the eye muscles and the orbital fat to grow in size. Enlargement of the fat in the eye socket causes the eye to protrude forward. Enlargement of the eye muscles causes double vision and may also cause the eye to bulge forward. The eyelids can also be impacted and are typically too widely open, resulting in trouble closing the eyes which may in turn damage the cornea. Cigarette smoking is highly associated with the development of severe eye disease and smoking cessation is an absolute necessity to achieve the best possible outcome.

Thyroid eye disease is a spectrum of disease with some patients having so little disease that it is his hardly noticeable, and some patients having severe potentially blinding disease. Vision loss in TED occurs when either the optic nerve becomes pinched by enlarging eye muscles or the cornea becomes ulcerated because the eyelids are unable to close over the protruding globe.

Orbital decompressions surgery to reduce bulging of the eyes caused by Thyroid Eye Disease.

Most commonly the thyroid hormones are high at the onset but TED may present independent of any problem with the thyroid hormones and it also may

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THE FUTURE OF THYROID EYE DISEASE

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Eyelid retraction and cosmetic eyelid surgery done to correct problems caused by Thyroid Eye Disease.

occur years after the problems with the thyroid hormones have been brought under control. Using medications to control the thyroid hormones is important to the patient's overall health but does not necessarily make the eye disease any better as the underlying problem with the eye socket is not abnormal thyroid hormones but an attack of the eye socket by the immune system. So blood test can be used to support the diagnosis of TED but no hormone or antibody blood test rules out TED. Orbital imaging with CT, MRI, and ultrasound are much better at ruling out TED but in my experience they must be read and interpreted in the context of a good history and orbital examination. Thyroid eye disease typically has an initial period of active inflammation which damages the orbital tissues. After about a year and a half of active inflammation, the disease often enters a quiescent phase and remains quiescent in about 90% of patients. Surgery is not effective in stopping the active inflammation phase of the disease. However, once the disease becomes quiescent, eyelid surgery, orbital surgery, eye muscle surgery, and cosmetic surgery is utilized to rehabilitate the patient's vision and appearance. Surgery can reverse much of the damage to both form and function and Dr. John McCann, MD has performed surgery on many patients with TED. The above photos are of a patients before and after removal of fat from the orbit which was deposited because of TED (left) and of a patient who underwent eyelid surgery to correct lid retraction caused by TED (right).

For decades the holy grail of TED treatment has been to find a safe, effective, and non-surgical treatment to turn off the disease during the active inflammatory phase so that damage to the orbital tissue never occurs. Steroids and radiation of the orbit are currently the available options for patients in the active and inflammatory phase of TED. However, these current medical treatments are not always effective and sometimes the side effects of the treatment are greater than the benefit

of the treatment. Neither treatment is effective at reducing the bulging forward of the eyes caused by the disease.
A former colleague of Dr. McCann's at UCLA, Dr. Terry Smith, and a former student of Dr. McCann's, Dr. Raymond Douglas have been performing research for years to find a medical therapy to treat patients in the active inflammatory phase of the disease. They have recently published a clinical trial describing the benefits of a new medication called Teprotumamab in the treatment of patients with TED. Tepratumamab is a monoclonal antibody that inhibits the insulin-like growth factor receptor (IGF-IR). Studies done by Dr. Smith and Dr. Douglas in the laboratory suggested this drug may benefit patients with TED so a clinical trail was organized. A very well designed placebo controlled clinical trial published in the New England Journal of Medicine demonstrates that the drug reduces inflammation of the eye socket, double vision, and bulging forward of the eye while also improving the vision, and the appearances of patients treated during the active inflammatory phase of the disease. The side effects of the treatment were minimal. A final FDA clinical trial is underway and there is hope the drug will come to market in a couple of years.

When Teprotumamab comes to market it seems likely that doctors will finally have a better way of intervening with patients during the active and inflammatory phase of TED. In some cases Teprotumamab will prevent the disease from progressing to the point where surgical intervention is required. It is currently not known, but it seems likely, that this drug will be most effective if started during the early active inflammatory phase of the disease. The early phase of thyroid eye disease can easily be missed or misdiagnosed as conjunctivitis or dry eye. Part of the difficulty with diagnosis is that there is no blood test that definitively excludes the diagnosis of TED. Introduction of Teprotumamab will make it more important for physicians to diagnose TED in the earliest stages. This will present some diagnostic dilemmas for internist, family practice doctors, endocrinologist, and eye care professionals. Making the diagnosis of TED early before extensive damage has been done to the orbital tissues will become critical when Teprotumamab is available. Early referral of patients with suspected TED to an orbital specialist for imaging and examination will become more common when Teprotumamab becomes available.

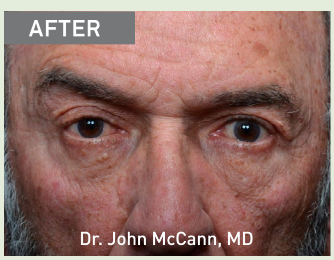
Dr. John McCann, MD, PhD

SPOT LIGHT ON A TREATMENT:

Lower Eyelid Dark Circles and Bags

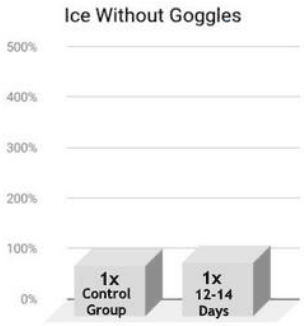
Dark circle under the eyes and bulging lower eyelid fat can make you look tired even when you don't feel tired.

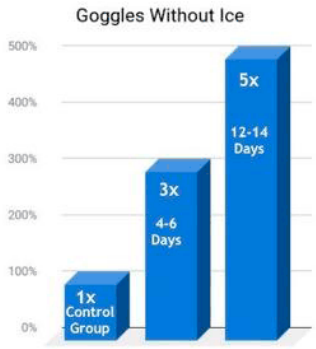
Dr. McCann has both surgical and non-surgical solutions to lower eyelid bags. Surprisingly the dark circles and bags in the lower eyelid are not caused by too much fat. With age most patients actually lose fat in the face and lower eyelids. The real culprit is a separation of the cheek fat and the lower eyelid fat that leaves a hollow area between the cheek and lid. This hollow area appears as a dark circle under the eyelid and makes the lower eyelid fat above the dark circle appear to bulge. Below are some examples of patients who Dr. McCann corrected this using a procedure called "fat transposition" that he described in the medical literature several years ago.



Compressive Eyelid Surgery Goggles GO COMMERCIAL

One of the innovations unique to the Center For Facial Appearances are the compressive goggles used after eyelid surgery. Dr. McCann invented the goggles to address patients top concerns with recovery from eyelid surgery which is bruising and swelling. Several years ago a study of Dr. McCann's patients compared the post operative experience of patients who used the compressive goggles after surgery to those who used ice compresses and it was found that the patients who used the ice had 3-5 time more bruising and swelling than those who used the goggles. Currently, most patient in the practice use the goggles. This year a patient satisfaction survey was performed to get feedback from 96 patients who had used the goggles. As shown in the graph below there was a high degree of satisfaction with the goggles. Dr. McCann's patients also provided many valuable suggestions on how to make the goggles work even better which were utilized to continue to perfect this device.





Recent improvements to the goggles include a change in the foam that touches the skin. The new foam is thicker, more easily compressed, and is made of a special material that cools the skin. These changes make the goggles much more comfortable to wear and provide the benefit of cooling the operated area without the need to use ice.

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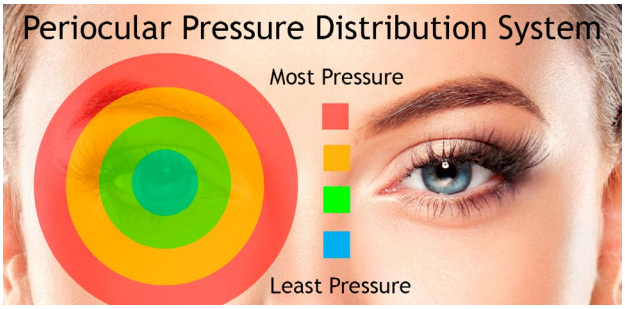

COMPRESSIVE EYELID SURGERY GOGGLES

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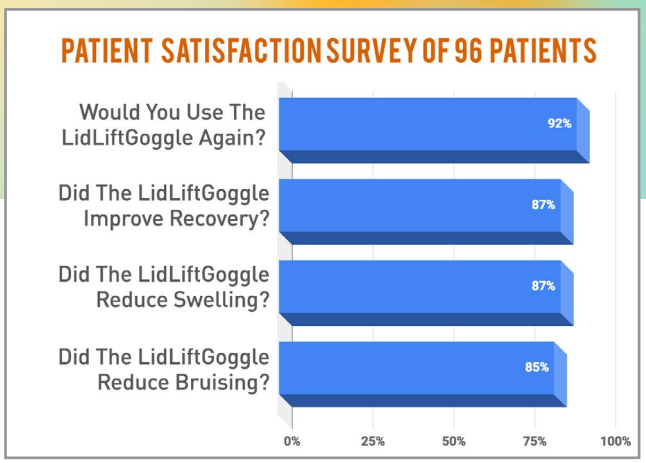

Dr. McCann was also concerned that the goggles apply the perfect amount of compression for each patient so that they are both comfortable and effective. To accomplish this the goggles were altered so that the surgeon can measure the diameter of the patients head and then use this measurement to adjust the the goggles to the perfect tension for each patient. He was also concerned that not too much pressure be put directly over the eyeball so the goggles were improved to put more pressure on the boney areas surrounding the eyelids and less over the eyeball itself as shown in the figure titled, "Periocular Pressure Distribution System".

Patients top concerns with the goggles is the inability to see when they are worn for the first several days after surgery. The goggles were further modified so that for most of the time they are worn patients can actually see through them! The goggles were also modified so they can be used in cases when only one side is operated on at a time. The goggles have been patented and commercial production has begun. Doctor McCann's brother Bill McCann has begun to market the goggles to other doctors across the nation under the name LidLiftGoggle and the feedback from others who have begun using the product has been very positive. If interested you can read more about this at www.LidLiftGoggle.com.

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