Cosmetic and Reconstructive Surgery of the Eye Region
PLASTIC EYE SURGERY ASSOCIATES, PLLC
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ORBITAL DECOMPRESSION AND ORBITAL EXPANSION FOR THYROID EYE DISEASE

Once the "active" inflammatory phase of thyroid eye disease has subsided, an individual may be left with structural changes, such as eye protrusion, eyelid retraction, and in some cases, double vision. Luckily, there are corrective procedures that can be performed to address these problems.

In most people the build-up of tissue and swelling behind the eye is not severe enough to damage the optic nerve, but it may cause a striking bulging of the eye which in itself is a distressing situation, not only from the standpoint of exposure of the eye, but also because of the disfigurement that it produces.

Fortunately, orbital expansion and/or decompression procedures can often address eye bulging. With orbital ex, the eye socket is enlarged to accommodate the extra tissue that the thyroid disease has deposited behind the eye. This allows the eye to settle back into a more normal position.

Around the *orbit* (the bone socket in which the eyeball sits) there are a number of sinus cavities that can be used to surgically expand the orbit. The sinus below the eye is called the *maxillary* sinus, and the sinus toward the nose is called the *ethmoidal* sinus. A *maxillary-ethmoidal* expansion is the most frequently used procedures for accommodating the extra tissues behind the eye. However, in some cases, the outside wall of the orbit (lateral wall) can also be removed; and finally, orbital roof, frontal sinus, or sphenoid sinus surgery may be helpful. Most people, however, require only a two wall maxillary-ethmoidal orbital expansion. Using magnification, specific portions of the orbit bones may be carefully removed, allowing communication between the orbit and the nearby sinuses. There is a nerve of sensation that runs through the bone underneath the orbit. This nerve provides sensation to the cheek, the lip, and some of the upper teeth on that side. Great care is taken to nibble the bone away from this nerve so that the nerve is preserved. Despite extreme caution, and the use of microsurgical techniques, some numbness occurs in 50% of cases. If numbness develops, 90% of people have 100% nerve recovery within 9 months.

We have developed and perfected a new technique called "Small Bone Decompression" that is now commonly used in patients with only moderate proptosis and excessive fat accumulation behind the eye. This technique provides outstanding results with much faster recovery and minimal risks. As we've discussed, broadly speaking, setting an eye back in the socket can be accomplished in one of two ways. Removing extra fat tissue from behind the eye or making the eye socket bigger. Although both types of procedures are often called orbital decompression, in our practice we often refer to procedures that focus mostly on fat removal with minimal bone modifications as "small bone decompressions" and procedures that are weighted more towards bone removal as "large bone decompressions" or "orbital expansions". The method used to perform most orbital

decompressions and expansions requires a very small incision in the skin on the outside corner of the eye, and this incision heals very well into the normal laugh lines around the eye.

However, the good news is that in more than 90% of cases, this numbness is only temporary. Additional hidden incisions inside the nose may also be used to more safely approach the very deep portions of the orbit and sinuses. After the bones of the sinuses are removed, the tissues which have built up behind the eye (usually fatty tissue or fat infiltrated eye muscles) are permitted to expand into the newly created spaces. In most cases, if the orbital tissues are soft, an immediate effect will be noted with the settling of the eye into a more normal position. In some cases, however, time is required for final settling to take effect. In fact, most people will observe a progressive effect for up to 12-24 months. Tiny absorbable stitches are placed on the inside of the eyelid and in the small incision of the skin at the outside corner of the eye. After surgery, cold compresses are used continuously along with medications to minimize swelling. Antibiotics are also given.

RESULTS
In over 5,000 orbital decompressions and expansions, we have always achieved an improvement in eye position.

ANESTHESIA
Orbital decompressions and expansions are performed under general anesthesia in the hospital, and the vast majority of people go home on the same day. Once at home, patients may need assistance during initial recovery. We generally see patient within a week after surgery.

ADDITIONAL FACTORS AND RISKS YOU SHOULD KNOW ABOUT

1. DOUBLE VISION

   For people undergoing small bone decompression, the cause of double vision after surgery is less than 0.03% or three in a thousand.

   For those undergoing large bone decompression, or orbital expansion surgery, the chance of double vision developing or worsening depends on a great deal upon the degree of double vision before surgery and the specific type of decompression performed. In general, if a person has no double vision before surgery, the chance of developing double vision is 5%, significantly better than the national average of 33% reported by other orbital surgeons. If someone has mild to moderate double vision before surgery, the chance of worse double vision after surgery is about 30%. For someone with severe double vision before surgery, the chance of continued severe double vision is close to 100%.

   In the vast majority of cases, double vision in primary gaze and reading gaze can be eliminated with prism glasses, eye muscle surgery, or both.

2. MINIMAL SURGICAL EFFECT

Other than bone removal, the main condition that affects the swelling of the eye in orbital decompression is how "stiff" the tissue is which has built up behind the eye. Many people have very soft tissue, and this tissue will settle easily allowing a good retroplacement of the eye. In some people, however, the tissue is very stiff and scarred, and in these individuals, even though the surgery is performed correctly, the tissue simply will not move easily into the new spaces. In such situations, the effect of orbital decompression might be less than hoped for. Usually, it is difficult to determine before surgery what the consistency of the tissue behind the eye will be; however, in general, people who have good eye movements will have softer more pliable tissue behind the eye. In some patients, there may be some asymmetry in the final eye position after surgery. Most pre-operative asymmetry, should it occur, can be compensated for with surgical adjustments of eyelid position. Rarely, further orbital surgery is helpful.

3. NUMBNESS OF THE LIPS AND GUMS

The sensory nerve, contained within the floor of the orbit, supplies feeling to the upper lip and gum, and about half the time a temporary numbness occurs in the lip and gums. This is nothing that is visible, but it can be somewhat of a nuisance, and in most cases, it dissipates within 1 – 9 months. In some people with severe protrusion of the eyes, the nerve may actually have to be removed in order to allow the eyes to settle completely. In these cases, there will be permanent numbness just below the eye, cheek and in the upper lip, gums, and maybe even teeth. However, the nerve is never purposely removed in surgery without prior discussion and approval.

4. SEVERE BRUISING AND SWELLING

The operation takes place in an area where there are a large number of blood vessels, and it is imperative that a person undergoing orbital decompression or expansion take **NO** medication that would prevent blood clotting. Drugs containing aspirin or aspirin-like medication (many arthritis medications) should **NOT** be taken for 10 - 21 days before surgery. Many over-the-counter medications contain aspirin-derivatives. Please check with your physician about all your medications, including over-the-counter cold remedies and decongestants. People with hypertension should have their blood pressure controlled adequately before undergoing surgery. Severe bruising and swelling can impair a successful result and cause additional scare tissue to form. Excessive bleeding and swelling of an extremely severe nature could conceivably cause loss of vision.

5. LOSS OF VISION

We have not had a single patient who has had any permanent loss vision as a result of orbital decompression. However, any time there is surgery around the eye, especially in the orbit behind the eye, there is always a risk of vision loss.

6. SINUS BLOCKAGE

Some forms of orbital expansion procedures essentially borrow part of the sinuses to allow the eye to settle into a more normal position with fat and enlarged muscles filling the sinuses. Sinus decongestants are used during surgery to minimize sinus

swelling and optimize sinus drainage. People who already have a tendency to develop sinus blockage may experience sinus obstruction after orbital expansions, perhaps even years later. Therefore, in order to avoid such problems, a surgical sinus drainage procedure may be performed at the time of orbital expansion using an endoscope (microscope) through the nose.

7. NEED FOR ADDITIONAL EYELID SURGERY OR EYE MUSCLE SURGERY

After a person has passed into the "inactive" phase of their Thyroid Eye Disease, there are three groups of surgical reconstructive procedures that can be offered to reverse the destructive effects of this disease.

The first is orbital decompression or expansion (with removal of 1-6 "walls") when necessary. These procedures must be performed first, as changing the position of the eye may alter the functions of the eye muscles and change the relative positions of the eyelids.

Second, in patients with double vision, adjustments can be made to the eye muscles after orbital rearrangement, but before any eyelid corrections.

Finally, many patients with Thyroid Eye Disease have some degree of eye protrusion and eyelid retraction. After orbital decompression or expansion, the eye does settle backward and slightly downward so that there is often a marked improvement in the lower eyelid position. The upper eyelids, however, in some cases, continue to "hang up" and require surgery to loosen them. In general, eyelid surgery can be done in the office.

Thyroid Eye Disease and its treatments are very complicated, but it is important for you to understand as much as you can about your disease. If you have any further questions about thyroid eye disease, its treatment, or your options, please be sure to ask. We are also happy to supply the names of other experienced physicians if you desire another opinion. *The more informed you are, the more you are able to make important decisions about your care, and the better you will feel about your disease and its treatment.*