



## GRAVES' DISEASE & THYROID FOUNDATION

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## Graves' Disease – Eye Interventions

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Graves' disease is a condition that, in part, affects the eyelids and tissue behind the eye in people who have had a thyroid disorder. The name Graves is simply the name of the man who described the condition years ago. Commonly, a person may develop swelling and buildup of tissue behind the eye together with retraction of the eyelids when they are hyperthyroid; however, the condition can occur without a person being hyperthyroid. Paradoxically, the eye condition can actually worsen after the hyperthyroidism is treated. The exact mechanism that causes the build up of tissue behind the eye with scarring and the retraction of the eyelids is not known. It is felt to be a substance by-product of some abnormal thyroid activity that is carried through the bloodstream to the orbit or may be carried through the lymphatic system in the neck to the orbit. The buildup of tissue behind the eye may be very severe infiltrating the eye muscles and compressing the optic nerve threatening vision. It may be less severe in

which the eye is simply thrust forward, although this does cause much discomfort, corneal exposure and disfigurement. The condition may be milder in which situation there is not a great deal of eye prominence but simply puffiness and retraction of the eyelids. All of these problems are distressing to the person who has them, not only from the standpoint of disfigurement, but from the standpoint of discomfort and the fact that eyesight and vision are placed at risk. In many cases the infiltration of this tissue into the muscles that move the eye (extraocular muscles) causes scarring within the muscles, which in turn, produces double vision which may be of a permanent nature.

### **Treatment of the Problem of Graves' Disease**

There are two situations that the patient may find herself or himself in with the onset of Graves' disease. Right after the changes begin with inflammation and swelling,

the person would be considered to be in the "acute" inflammatory phase (hot phase). This is when the active process in the disorder is affecting the tissue behind the eye and all efforts are made at the time to suppress the inflammation with non-surgical means: usually cortisone, anti-inflammatory agents, and sometimes irradiation. Surgery is to be avoided in this situation unless it is needed for an emergency. Any results obtained by surgery during this period of time can be changed or lost if the inflammation is still continuing. After the inflammation subsides and stops, and the process is no longer active, a person may be left with residual changes that will stay the same. This is the "stable" phase, or the inactive phase (cold phase). It is in this situation that rehabilitative surgery, if needed, should be undertaken. Once the person reaches the inactive or cold phase, the anti-inflammatory treatments mentioned should not be used because they are not effective. Unfortunately, we have no blood test or any specific test to indicate when

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one has passed from the hot phase to the cold phase. In most people, it takes approximately six months or longer for the active phase to subside. There are some things that can prolong the active phase of people who are actually hyperthyroid at the time of the development of these changes in the orbit, and eyelids may improve somewhat when the hyperthyroidism is controlled. Paradoxically, with permanent treatment, such as radioactive iodine or surgery, sometimes the eye changes can be made worse or the "hot phase" prolonged. Why this happens is not known.

### **Treatment of the Active Inflamed Phase Cortisone**

To combat the inflammatory changes in the tissue, the first line of defense of cortisone. In cases of orbital involvement either mild or severe which are just developing high dosages of cortisone (doses that would suppress an immunologic reaction) are used, many people will respond to the cortisone. This is used commonly in people who have progressive inflammatory changes, particularly if there is some visually threatening aspect, either doubling of vision or dimming of vision from compression of the optic nerve from swollen muscles

behind the eyes. It has been shown that some people respond (responders) and some people do not respond (non-responders). One cannot determine ahead of time how well someone will respond to cortisone, but if a person is going to respond to these high doses, they will do so within two weeks; if no response is detectable in two weeks, then the cortisone must be discontinued because of the known side effects to cortisone. If a response is obtained, then the cortisone will be reduced in dosage until the least amount of cortisone that can control the condition can be used.

### **Radiotherapy**

Some people who do not respond or cannot tolerate cortisone will still have progressive inflammatory changes. X-ray treatment to the orbital tissue can reduce the inflammation and swelling dramatically. Dr. Kriss at Stanford introduced radiotherapy to the orbit for Graves' disease years ago. It has gained popularity and was used to treat Mrs. Bush (the President's wife) for this problem. The x-ray type used is (high energy, linear accelerator) cancer strength, but it is focused on the effected tissues so that it will prevent any general body effects and reduce any eye

side effects. People who have diabetes or poor blood circulation are more at risk for eye side effects with this treatment. Usually cortisone is used in conjunction with this treatment for a while.

### **Orbital Decompression**

Despite the effectiveness of cortisone, radiotherapy, or a combination of both, there are some people who continue to have threatened compression of the optic nerve with visual loss. In these people the last resort to salvage vision is the orbital decompression which consists of enlarging the bony socket by opening up some of the sinuses behind the eye, thus relieving the pressure on the optic nerve. This procedure is more commonly used to allow the eye to settle back in cases of protrusion, but a special variation of this procedure is used to prevent blindness in some unusually severe cases.

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