

PUPIL DILATION PROTOCOL

Overview:

Mild pupil dilation with 0.5% tropicamide is safe and effective method to obtain high quality digital retinal images. No demonstrated risk factors exist for angle closure glaucoma using this dilation method.

Background:

Approximately 10% of images that are acquired without pupil dilation using non-mydriatic digital retinal cameras cannot be adequately interpreted by clinicians due to poor image quality. In a Medicare-age patient population, the unreadable rate may be 15-20%. Two factors that affect image quality are small pupil size and opacities, such as cataracts. These limitations can be overcome by temporarily increasing the pupil size with dilating eye drops. Better images can be acquired more quickly when pupils are dilated, particularly with older patients with small pupils.

The most common side effects of eye dilation are sensitivity to light and inability to focus up close (in patients with their natural lenses). The drops may also cause mild eye irritation for a few minutes after use. Other side effects are rare and can include hypersensitivity, which can cause conjunctival redness. Pupil dilation using two or more dilating agents in combination has rarely been reported to cause angle closure glaucoma, a sight-threatening condition (1:18,000 patients), but there have been no reported cases of angle closure caused by using a single dilating agent (see Pandit et al.). Thus, one drop of 0.5% or 1% tropicamide in the eye can safely be used as a single agent to provide dilation for retinal photography.

Onset of pupil dilation occurs after *approximately 10-15 minutes*. Any light sensitivity that occurs will typically last about two hours, and *temporary sunglasses should be provided to the patient when they leave the clinic (temporary sunglasses are widely available from most ophthalmic medical supply companies, search the Internet for "Post-Mydriatic Sunglasses")*. Rare patients (typically with blue irises) may experience larger than normal pupils the next day.

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References:

Pandit R, Taylor R. Mydriasis and glaucoma: exploding the myth. A systemic review. DiabetMed 2000; 17,693-699.

Murgatroyd H, Ellingford A, Cox A, et al.. Effect of mydriasis and different field strategies on digital image screening of diabetic eye disease. Br J Ophthalmol. 2004; 88:920-924.

Procedures:

1. Prior to Placing the Dilating Eye Drop:

If pupil dilation is required, the photographer will determine that the patient:

1. Has not had a previous adverse reaction to pupil dilation;
2. Does not have a history of untreated angle closure glaucoma; and
3. Is not wearing contact lenses at the time of photography.

Inform patient that one drop will be placed on each eye to increase pupil size. They may experience blurred vision and light sensitivity for a few hours and will be given temporary sunglasses. They should be careful when driving and performing other activities until the effect wears off.

2. Instilling the Eye Drops – *Always wash hands before and after*

1. Hold the bottle a half-inch from the eye.
2. Use one finger to gently separate the lower eyelid from the surface of the eye and ask the patient to look up.
3. Instill one drop between the lower lid and each eye in turn
4. The patient can pat eyes dry with a tissue.
5. Wait about 10-15 minutes for drops to take effect. The room lights can be dimmed.
6. After photography, give the patient plastic sunglasses before leaving the clinic.
7. Instruct the patient to contact the clinic if they develop severe aching pain in one or both eyes until the pupils return to normal size (approximately two hours).

3. Care of the Dilating Eye Drops

1. Discard the bottle of drops if the nozzle appears discolored or contaminated.
2. Discard unused eye drops after expiration date.

Edward Chaum, MD PhD
Chief Medical Officer, RetinaVue P.C.



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