

YAG Laser Capsulotomy

Posterior capsule opacification

Cataract extraction involves the removal of the natural lens of the eye, and this lens is usually replaced with a plastic intra-ocular lens (IOL) implant. If one were to imagine the natural lens of the eye to be like a polythene bag full of jelly, then in the most common methods of cataract surgery, only the contents of the bag are removed. The outer capsular bag or membrane of the lens is left in the eye, and is used to support the intra-ocular lens implant. In some cases following cataract extraction, cells grow on the capsular membrane, causing a progressive thickening and opacification of the lens capsule. This leads to a gradual deterioration of vision, similar to the visual loss from the original cataract. The incidence of posterior capsular opacification varies but may be significant in up to 30% of people having cataract surgery.

Factors that account for the variability of capsular opacification include the design of the intra-ocular lens implant, and the type of material from which it is made. The age of the patient, the amount of inflammation in the eye following surgery, and the length of time since the surgery was carried out are also important.

The capsulotomy procedure

If opacification of the lens capsule is affecting a patient's vision, then treatment by YAG laser capsulotomy is generally recommended. The YAG laser emits an invisible infra-red laser beam, which is used to create an opening in the lens capsule in the central pupillary area, such that light rays can once more pass clearly to the back of the eye. The YAG laser beam is focussed to a point inside the eye, and when the laser beam is fired, the high level of energy achieved at the focal point vapourises any tissue at the point of focus, and also causes a small shock wave which helps to physically disrupt the capsular membrane.

Since the capsule does not have any nerves in it, the procedure is completely painless. Typically anaesthetic drops are put into the eye, so that a special contact lens can be applied to the corneal surface, in order to help focus the laser beam onto the lens capsule. During the treatment the laser makes a small clicking sound when it is fired, and the patient may see little flashes of light from the plasma formations.

Effects of YAG laser capsulotomy

The benefits from laser capsulotomy are generally apparent straight away after treatment, and patients can return to normal activities without any delay. It is often timely to have the spectacle prescription checked once the laser treatment has been done. Although some of the capsular membrane is actually vapourised by the YAG laser, the central part of the capsular membrane is usually broken free from its surrounding attachment, and fragments of the capsule are dispersed into the vitreous. These may be apparent to the patient as 'floaters', but are not generally troublesome. Because the lens capsule is in close contact with the intra-ocular lens implant, the laser may sometimes cause some pitting of the lens surface, but this seldom has any perceptible effect on the vision.

Rarely, after the laser treatment there may be some inflammation in the eye, or the intra-ocular pressure may become raised. Very occasionally the laser capsulotomy causes problems in the retina, such as retinal tears, retinal detachment, or water logging of the retina – cystoid macular oedema.

Long term outcome.

Provided that an adequate opening in the lens capsule is achieved, a single laser treatment is all that is required. Although the lens capsular cells continue to grow and cause progressive thickening of the peripheral capsular membrane behind the iris, in the central pupillary area the support for the cells has been removed, so they cannot regrow there to cause further visual problems.