MicroPulse Cyclodiode

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What is MicroPulse cyclodiode laser?

The MicroPulse cyclodiode laser is a non-invasive laser treatment of the part of the eye that produces fluid. Compared to traditional cyclodiode laser, MicroPulse laser allows tissue to cool between pulses, minimising tissue damage.

Cyclodiode laser is a highly concentrated beam of light that is used to treat the part of the eye that produces fluid, thereby lowering eye pressure. Unlike traditional cyclodiode laser, MicoPulse laser uses very short bursts of energy, allowing tissue to cool between pulses thus minimizing damage to surrounding parts of the eye.

Eye words to know

Aqueous: A clear fluid that circulates inside the front portion of the eye.

Conjunctiva: A thin membrane that covers the white part of the eye.

Cornea: A clear, dome-shaped window at the front of the eye.

Drainage angle: The area between the iris and cornea where the drainage pathways are located.

Intraocular pressure: The fluid pressure inside the eye.

Iris: The coloured part of the eye that controls the size of the pupil.

Glaucoma: A condition that damages the optic nerve of the eye, often associated with high eye pressure.

Pupil: The opening at the centre of the iris.

Schlemm canal: A circular canal into which aqueous drains after passing through the trabecular meshwork.

Trabecular meshwork: A sieve-like meshwork through which aqueous drains before entering Schlemm canal.

Who is suitable for MicroPulse cyclodiode laser?

Cyclodiode laser is most commonly used in patients with poor vision from glaucoma where other treatments have failed or unlikely to be successful. However, MicroPulse cyclodiode may be considered in earlier disease to avoid or delay the need for more invasive surgery.

How does it work?

Inside the eye, a clear watery fluid called aqueous is produced by a part of the eye called the ciliary body which is located just behind the coloured part of the eye (iris). The clear fluid circulates inside the eye before draining away through drainage channels. In glaucoma, these drainage channels do not work properly and this can cause a buildup of pressure inside the eye. This pressure can damage the optic nerve which carries images from the eye to the brain affecting your vision.

High eye pressure occurs when more fluid is produced than can drain away. Cyclodiode laser makes very small burns in the part of the eye that produces fluid (the ciliary body), thus reducing fluid production and thereby lowering eye pressure. The procedure reduces fluid inside the eye, which is separate from tears.

What are the benefits?

The benefit of cyclodiode laser is to reduce eye pressure to prevent or delay further damage or reduce pain from high eye pressure.

In a study performed in Singapore, MicroPulse cyclodiode laser successfully lowered eye pressure in 73% of patients. Patients treated with MicroPulse cyclodiode had on average a 33% reduction in eye pressure and 61% reduction in the number of glaucoma medications required.

The effects of laser may wear off over months or years, however the treatment can be repeated if required.

What does the procedure involve?

Cyclodiode laser is usually performed in an operating theatre under local anaesthetic, meaning you are awake but your eye will be numb so you will not feel anything. Your eye will be numbed with eye drops and then a small injection will be given around your eye. The injection may cause a pressure sensation and brief discomfort. You will have the option of requesting light sedation. The local anaesthetic takes several hours to wear off and may affect your vision during this time. The procedure can also be performed while you are asleep under general anaesthetic.

The laser is applied via a pencil-like probe that is placed against the white of your eye. You will not feel or see the laser and the procedure

takes about 10 to 15 minutes. At the end of the procedure an eye pad will be placed over your eye.

You will be given new eye drops to take following the procedure. You should also continue your existing glaucoma medications (and/or tablets) as the laser does not begin to work straight away.

At the end of the procedure your operated eye will be padded. If your unoperated eye does not see well, your operated eye may not be padded and instead covered with a clear plastic shield.

You will usually be able to go home the same day as your operation. Most patients will need to be examined in the first few weeks after surgery.

How soon will I recover?

It is normal for your eye to be slightly blood shot and sore after the procedure. You may want to take a painkiller such as paracetamol following the procedure.

Your vision may also be blurry for 1 – 2 weeks after the procedure.

You will be given new anti-inflammatory and antibiotic eye drops to prevent inflammation and infection.

The laser takes 4 – 6 weeks to have its full effect and during this time you will need to continue your glaucoma medications. Your doctor will advise you when you can stop your glaucoma medication.

Most people will take 1 – 2 weeks off work, however the length of time will depend on the nature of your work.

It is safe to fly after surgery, however you will need to be seen regularly by your surgeon in the early post-operative period.

What are the risks?

Your eye will feel bruised and swollen following the operation. However some patients may experience pain or have inflammation/swelling in their eye following the procedure. You will be given eye drops following the procedure to control this inflammation and help relieve discomfort.

It is not uncommon to require a second laser treatment should your eye pressure remain high after the first treatment.

Rarely, following traditional cyclodiode laser your eye pressure may become permanently low and the cosmetic appearance of your eye may change. Approximately 20% of patients notice a reduction in their vision following traditional cyclodiode. However, MicroPulse is gentler on the eye and these side effects have not been reported.

Exceedingly rarely, cyclodiode laser to one eye may cause inflammation or swelling in your other eye.

Are there any alternatives?

Alternative treatments to cyclodiode laser include medications (eye drops and/or tablets) or operations such as trabeculectomy or aqueous shunt insertion.

If you do not have treatment, there is a risk that the sight or pain in your eye will get worse because of glaucoma.

References and Disclaimer

Aquino MC, Barton K, Tan AM, Sng C, Li X, Loon SC, Chew PT. Micropulse versus continuous wave transscleral diode cyclophotocoagulation in refractory glaucoma: a randomized exploratory study. Clinical & Experimental Ophthalmology. 2015; 43(1):40-6.

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