
Our vision: Is for Australians to be free of glaucoma blindness

Minimally Invasive Glaucoma Surgery (MIGS)

First line treatment for glaucoma is usually in the form of eye drops or laser therapy. When these two options are no longer sufficient or are not suitable, glaucoma surgery may be required.

Conventional glaucoma filtration surgery is effective but can be associated with significant risk factors. In recent years, a new class of treatment called 'minimally invasive glaucoma surgery' or 'MIGS' is changing the glaucoma treatment model.

These procedures use tiny incisions to place microscopic devices inside the eye to lower the pressure inside the eye, aiming to reduce or eliminate the need for glaucoma eye drops or invasive surgery. More importantly, MIGS devices do not typically disturb the conjunctiva (the membranous covering of the eyeball), therefore it does not alter the success rate of subsequent glaucoma filtration surgery, if required.

MIGS procedures are most commonly performed at the time of cataract surgery but some can be performed alone if required.

These procedures represent a major advance for people with glaucoma. However, they will not cure your glaucoma, reverse any damage already caused by glaucoma, or bring back any vision which has already been lost.

Types of MIGS

There are a number of MIGS procedures and they work in different ways. In the healthy eye, the amount of fluid produced is equal to the amount of fluid

that drains out. However, in glaucoma the natural drainage channel inside the eye (where fluid normally drains out of the eye) becomes clogged or blocked. This results in a rise in pressure which can damage the optic nerve. MIGS procedures work by bypassing this blockage and help the fluid inside the eye drain out via different routes.

There are a number of MIGS procedures available in Australia and you should speak with your optometrist or ophthalmologist to see if one is suitable for you: *iStent Inject*, *Hydrus*, *XEN Gel Stent*.

iStent Inject

What is it?

The iStent Inject is a tiny tube less than 1 mm in length made of surgical-grade titanium. The iStent Inject is inserted into the natural drainage channel inside the eye, bypassing the blockage, allowing fluid to more easily drain out.

Two iStent Inject stents are typically inserted at the same time as cataract surgery to lower eye pressure and reduce the need for glaucoma medications.

How does it work?

These tiny stents work by bypassing the trabecular meshwork, which is presumed to be blocked in open-angle glaucoma. The fluid inside the eye therefore drains via the stents into Schlemm's canal rather than through the trabecular meshwork.

Who is it suitable for?

The procedure is most suitable for adult patients with mild-to-moderate open-angle glaucoma treated with glaucoma eye drops who require cataract surgery. iStent Inject is not suitable for the treatment of very advanced glaucoma or where the natural drainage system of the eye is damaged. iStent Inject is also not suitable for patients with closed angle glaucoma.

What are the benefits?

The potential benefit is the lowering of intraocular pressure and possibly reducing the number of glaucoma eye drops without undergoing complex glaucoma surgery. Recovery is rapid. iStent Injects cannot be seen or felt. It is safe to have an MRI scan in most machines following this procedure.

Before the Procedure

Your doctor will provide you with specific instructions prior to the operation. You will usually be asked to continue with all your usual medications including your glaucoma eye drops even on the day of surgery. You will likely have a period of fasting immediately before the surgery but again your doctor will provide you with the specific details

During the procedure

Your eye will be anaesthetised with a local anaesthetic injection. The procedure itself is quick and usually only takes minutes to complete. iStent Inject is delivered through a very small incision (2 mm) in the front of the eye and implanted into the drainage pathway.

The two stents are implanted in different areas to maximise outflow of fluid. If combined with cataract surgery, your surgeon may choose to implant the stents before or after cataract surgery.

After the procedure

The recovery from surgery is rapid and typically no longer than cataract surgery alone. Your surgeon will prescribe some antibiotics and anti-inflammatory eye drops to apply for up to one-month following the surgery. You may be able to stop some or all of your glaucoma eye drops. However, the effect of the iStent Inject can reduce over time and glaucoma eye drops may need to be resumed.

What are the risks?

The potential risks and complications associated with iStent Inject are low. There is a small risk of bleeding inside the eye at the site of the stent implantation. The intraocular pressure may also increase temporarily following the procedure.

There is a small risk of poor positioning or dislodgment of the stents, and this may require a return to theatre for re-positioning, removal of stents, or re-insertion of stents. Because this is an intraocular procedure, there is the small risk of potential infection inside the eye.

Are there any alternatives?

The alternative treatment options are glaucoma eye drops, laser therapy, one of the other MIGS devices, or conventional glaucoma surgery. Your doctor will be able to explain each of these and whether they are suitable for you.

Hydrus

What is it?

The Hydrus is a curved flexible stent approximately the size of an eyelash. It is made of a super-elastic alloy of nickel and titanium, the same material used to make stents for use in the heart.

How does it work?

Once inserted, it acts like a scaffold to widen and dilate the natural drainage channel inside the eye. It contains a small inlet to allow fluid inside the eye to enter the stent.

Who is it suitable for?

Like the iStent, it is suitable for people with mild-to-moderate open-angle glaucoma who may require additional treatment to glaucoma eye drops and laser and/or in whom eye drops are not tolerated.

What are the benefits?

Recovery is rapid and patients may experience a modest reduction in eye pressure and/or need for glaucoma medication. The Hydrus cannot be seen or felt. Like the iStent, it is safe to have an MRI scan in most machines following the Hydrus procedure.

Before the procedure

Your doctor will provide you with specific instructions prior to the operation. You will usually be asked to continue with all your usual medications including your glaucoma eye drops even on the day of surgery.

You will likely have a period of fasting immediately before the surgery but again your doctor will provide you with the specific details.

During the procedure

Your eye will be anaesthetised with a local anaesthetic injection. Similar to iStent Inject, Hydrus is quick to insert and usually only takes minutes to complete. The device is delivered through a very small incision (2 mm) in the front of the eye and implanted directly into Schlemm's canal.

If combined with cataract surgery, your surgeon may choose to implant the stents before or after cataract surgery.

After the procedure

The recovery from surgery is rapid and typically no longer than cataract surgery alone. Your surgeon will prescribe some antibiotics and anti-inflammatory eye drops.

Are there any alternatives?

The alternative treatment options are glaucoma eye drops, laser therapy, one of the other MIGS devices, or conventional glaucoma surgery. Your doctor will be able to explain each of these and whether they are suitable for you.

Xen Gel Stent

What is it?

The XEN is a soft and flexible tube derived from porcine collagen. It is 6 mm long and nearly as thin as a strand of human hair.

How does it work?

The Xen Gel Stent works by creating a new drainage channel in the eye and drained fluid forms a small blister or bleb under the membranous covering (conjunctiva) of the eye, located on the top of the eye and covered by the upper eyelid. The bleb cannot usually be seen with the naked eye or felt. It is also MRI safe.

Who is it suitable for?

XEN implantation is typically performed by itself to lower eye pressure where medications have failed to reduce eye pressure to a safe level. However the XEN can be performed with cataract surgery for people with both advancing glaucoma and cataract, or where the drainage channel is closed.

Due to the XEN bypassing the natural drainage channels altogether it can be used in more types of glaucoma including where the natural drainage channel is damaged or closed.

What are the benefits?

The XEN is less invasive and offers a much faster recovery than traditional glaucoma surgery. Unlike the most commonly performed glaucoma operation, called trabeculectomy, there is no need for sutures and the return of clear vision is more rapid. The XEN has the potential to lower intraocular pressure more than iStent Inject and Hydrus and therefore can be performed on patients with moderate to advanced glaucoma. As the XEN starts to work straight away to lower eye pressure, you will be able to stop taking your glaucoma drops in the operated eye immediately after the procedure.

Before the Procedure

Your doctor will provide you with specific instructions prior to the operation. You will usually be asked to continue with all your usual medications including your glaucoma eye drops even on the day of surgery. You will likely have a period of fasting immediately before the surgery but again your doctor will provide you with the specific details.

During the procedure

Your eye will be anaesthetised with a local anaesthetic injection. A small incision will be made in the front of the eye to allow implantation of the XEN. The procedure is faster than traditional glaucoma surgery and may take approximately 30 minutes to complete.

After the procedure

Following surgery, your surgeon will prescribe some antibiotics and anti-inflammatory eye drops but you should be able to cease your usual glaucoma eye drops as advised by your doctor. You will need to attend regular follow-up appointments to monitor your eyes.

What are the risks?

XEN implantation is associated with a small risk of infection, bleeding inside the eye, and very low intraocular pressure that may lead onto choroidal effusions (collapsing of the inner layers of the eye). The stent itself has the potential to move or perforate the surface of the eye and this can result in leakage of the aqueous fluid and higher risk of infection. In this case a return to the operating theatre is required for repair.

Are there any alternatives?

Alternative treatment options include traditional glaucoma operations such as trabeculectomy and glaucoma drainage tubes. Certain types of laser therapy may also be considered.

