Patient Information

University Hospitals Coventry and Warwickshire NHS Trust

Ophthalmology

Canaloplasty and ab interno trabeculotomy (AIT)

What are canaloplasty and ab interno trabeculotomy (AIT)?

Canaloplasty and ab interno trabeculotomy (AIT) are relatively new minimally invasive glaucoma surgery (MIGS) techniques that aims to lower your eye pressure by increasing the drainage of fluid out of your eye.

They aim to prevent your glaucoma from getting worse. It does not improve your vision. In some cases, it may reduce the need to use eye drops for glaucoma.

These are done by using devices that enters the eye through a tiny incision at the edge of the cornea (the eye's clear, protective outer layer). The device is used to dilate the drainage channel (Schlemm's canal) (canaloplasty) and fluid collector channels. It may also be combined with removing part of the roof of the drainage channel (trabecular meshwork). This procedure helps to remove fluid from your eye. It can be combined with cataract surgery, which adds around 15 minutes total onto the procedure.

How is this procedure different from other glaucoma surgery?

The benefits of the minimally invasive glaucoma surgery over traditional glaucoma surgery include:

- They are minimally invasive due to the size of the incision (cut) and the way it works, as opposed to significant surgical trauma from some other surgical options.
- They use an internal approach instead of need of creation of an external drainage channel.
- They may easily be combined with cataract surgery.

The benefits of canaloplasty and ab interno trabeculotomy (AIT) over other minimally invasive glaucoma surgery (MIGS) include:

- These are implant free procedures and therefore not prone to the problems of dislodging/blockage of implants.
- They deal with resistance to drainage of fluid from the eye at all possible points and are shown to be very effective.
- They can be performed as a solo procedure with minimal recovery time (similar to cataract surgery) or be combined with cataract surgery.

Are canaloplasty and ab interno trabeculotomy (AIT) suitable for everyone?

Not all patients with glaucoma are suitable for this surgery. Typically, these procedures are more effective in the early to moderate stages but can be used in some cases of advanced glaucoma.

Will canaloplasty and ab interno trabeculotomy (AIT) cure my glaucoma?

Canaloplasty and ab interno trabeculotomy (AIT) are surgeries aimed to prevent your glaucoma from getting worse by lowering your eye pressure.

As with all other glaucoma treatments, it cannot cure glaucoma, reverse any damage already caused by glaucoma or bring back any lost vision.

The surgery does not always work alone, and glaucoma medications or additional glaucoma surgery may be needed.

What are the risks and complications of Canaloplasty and Ab Interno Trabeculotomy (AIT)?

There are risks with any glaucoma surgery procedure.

Canaloplasty and ab interno trabeculotomy (AIT) are designed to be less traumatic than conventional glaucoma surgery (trabeculectomy ab externo). Any damage to eye structures is expected to be less than conventional surgery.

The risk of complication depends on the type and stage of glaucoma, the patient's age, other eye and health conditions and previous surgery.

Canaloplasty and ab interno trabeculotomy (AIT) are not completely new procedures but there are continually developing new tools based on otherwise established procedures which already have the approval of the National Institute of Health and Care Excellence (NICE).

Potential complications

- **Bleeding:** mild transient bleeding inside the eye (hyphaema) after your operation is very common. It almost always resolves on its own within days or weeks. This can lead to some delay in vision recovery after surgery. Very uncommonly bleeding in the eye may need to be washed out surgically. Bleeding can also occur some months after surgery but this is very uncommon.
- **Infection:** infection can happen after any eye operation. The risk of severe infection causing loss of vision is considered to be about 1 in 500. While infection is very uncommon, it may be very serious and can result in irreversible vision loss or the loss of an eye.
- **Inflammation:** all eye surgeries lead to some inflammation. Usually, inflammation is controlled by the medications given after the surgery. It can be severe and may require prolonged treatment, but this is uncommon.
- **High pressure after surgery**: sometimes your eye pressure may remain high after surgery. This is usually controlled with pressure lowering drops and additional procedures to control the pressure may need to be explored. Over time, the drainage channels may undergo scarring which may close the opening that was created, leading to

increase of the eye pressure. The pressure may sometimes even increase after the procedure.

- **Low pressure after surgery**: more rarely the pressure may be too low after surgery. This is usually detected during clinic appointments and is often treated by stopping any pressure-lowering eye drops and reducing steroid eye drops. Sometimes an injection of viscoelastic (a jelly like material) in the front chamber of the eye is required to raise the pressure.
- **Corneal damage:** corneal decompensation (clouding of the normally clear front window of the eye) may occur. This is very uncommon.
- **Iris damage:** the surgery may very uncommonly lead to inadvertent damage to the iris tissue.
- **Cataract formation**: if you haven't had a cataract surgery and are not having one combined with OMNI then, surgery can enhance formation of cataract in the eye. This may need to be dealt with surgically in the future.
- **Cystoid macular oedema**: inflammatory fluid may collect in the centre of the retina (layer of tissue in the back of your eye). If this occurs it is usually mild and needs a course of anti-inflammatory drops. It can be severe and may require prolonged treatment and affect vision, but this is uncommon.
- **Loss of vision:** some degree of blurred vision is expected for a few weeks after surgery. Uncommonly, complications lead to irreversible loss of vision or loss of an eye.
- **Sympathetic ophthalmia:** the other eye may be very rarely affected by simultaneous inflammation in the two eyes, causing loss of vision.

Please seek urgent advice if there is a significant sudden change in your vision at any time after your surgery.

Severe complications are uncommon and steps are taken to prevent them, but it may not be possible in all cases. Please talk to your doctor for complete risk information, and to discuss whether treatments with the canaloplasty **and** ab interno trabeculotomy (AIT) are right for you.

What are the risks of not having the procedure?

If your eye pressure remains high despite medical therapy there is a risk that your vision will worsen over time. Vision loss from glaucoma is irreversible and permanent. The rate at which vision may deteriorate varies vastly between different patients.

Are there any alternatives to this procedure?

Your surgeon recommends options for your glaucoma treatment after assessing a number of specific characteristics. These include:

- your eye pressure
- your stage and type of disease
- the state of your eye tissues
- other eye conditions you may have, your general health and relative risks of different procedures.

There are many ways to treat glaucoma. Treatments include eye drops, conventional surgery like trabeculectomy, tube implants, laser trabeculoplasty, other MIGS procedures like iStent implantation and trabectome ab interno trabeculotomy.

Your doctor will be able to discuss this further.

What happens before your operation?

Before the operation you will be asked to attend a pre-operative assessment appointment to check that you are fit for the procedure.

Please bring to your appointment:

- an up-to-date list of your medications
- a brief summary of your medical history.

If you are unsure of anything, please check with your GP.

During your pre-operative assessment your general health and suitability for anaesthetic will be assessed. Any investigations (such as blood tests) will also be undertaken as appropriate.

Do you use blood thinning medication?

Please tell your eye surgeon during the consultation and tell the nurse at your preoperative assessment if you use:

- blood thinning medications such as **aspirin, warfarin and clopidogrel**
- new blood thinning medications such as **rivaroxaban/apixaban or dabigatran**

Some of these medications **will need to be stopped temporarily** to decrease the risk of bleeding with surgery.

The safety and duration of this will be done in discussion with your doctor/haematology team, and you will be advised accordingly.

Warfarin: Patients who are taking warfarin are advised to have their level (e.g. INR) checked at one week and at three days before surgery to make sure it is within the correct therapeutic range.

Do you use eye drops?

You should continue using any eye drops and tablets for your glaucoma as directed by your ophthalmologist until your operation. In some cases, you may be asked to stop the eye drops for a certain period before the operation. This is to reduce the risk of eye pressure going too low immediately after the operation.

What happens during surgery?

The surgery is usually performed under a local anaesthetic. This means that you will be awake, but your eye will be numbed so you will not feel any pain during surgery.

The eye will be anaesthetised first with eye drops and then an injection of anaesthetic will be administered around the eye. The anaesthetic injection

itself may cause some discomfort (a slight sensation of pressure as the anaesthetic is delivered). The injection prevents pain and excessive eye movement during surgery.

For many hours you may either see nothing out of the eye or have very blurred vision. Your anaesthetist will discuss this with you before the surgery.

During surgery your face will be covered by a sterile sheet, or a drape. This keeps the operation site sterile and also prevents you from seeing any of the surgery. You will be aware of the surgeon working around the eye, but you should not feel pain.

Somebody will usually be holding your hand during surgery. You should squeeze their hand in the event of any pain or discomfort. This will alert the surgeon so that they can stop the surgery and top-up the anaesthetic if needed. You are also likely to hear the surgeon speaking to the scrub nurse and other members of the surgical team.

Sometimes general anaesthetic may be considered to put you to sleep during the operation. This can happen if local anaesthetic is not considered suitable or if you specifically choose so.

What happens after the operation?

After the operation, your eye will be covered by a protective plastic shield and an eye pad which stays in place overnight. An appointment will be arranged to review you on the following day.

Usually, you will be able to go home after a few hours. In some circumstances you may need to stay in overnight.

Your eye may begin to feel sore once the anaesthetic starts to wear off. The pain is not usually too bad and you can take a pain killer tablet which you are used to (such as paracetamol or ibuprofen). Your eye is likely to look red and have some bruising around it.

You will be advised to start eye drops on the same evening after cleaning the eye.

Patients are advised to ask a friend or relative to accompany them home after surgery.

How should I expect to feel after the operation?

It is normal for the vision to be blurred and the eye to be uncomfortable and red after surgery.

The period of blurring is variable, usually lasting 3 to 14 days. Patients may also observe that their vision is worse in the morning but gets better upon getting out of bed. This happens as the blood moves in the eye due to gravity.

Your eye may be watery and sore for some time after surgery. It can take 2 to 4 weeks for the eye to feel normal and the vision to stabilise after surgery.

Will I have to use eye drops after surgery?

Special post-operative drops are given to every patient and are to be used regularly. These include:

- an antibiotic (such as chloramphenicol)
- an anti-inflammatory steroid (such as dexamethasone) for few weeks
- drops to keep the pupil small (such as pilocarpine) for 3 to 4 weeks
- glaucoma medications will need to continue and may be reduced in some cases

The post-operative eye drops will normally need to be taken for many weeks. Any changes to your eye drops will be discussed with you each time you attend the outpatient clinic. If you are running out of the eye drops you will need to get a repeat prescription for them from your GP before you run out.

It is important that the eye drops are not stopped or the dosage changed, without consulting your eye surgeon.

It is important that any eye drops for the other eye are continued as before unless you are advised otherwise.

What happens to the eye pressure after surgery?

Your eye pressure is expected to drop in the majority of the cases, but this will not cause any special effect on your vision or how your eye feels.

Each patient is different and the exact eye pressure result will vary between patients. Uncommonly, pressure may increase after surgery.

How often will I need to be seen after surgery?

After the first review on the day after surgery, you will be seen 1 week later and then after 3 to 4 weeks after the operation. In individual cases it may be necessary to see you more often.

It is very important that you attend all of your clinic appointments and use your eye drops as prescribed.

What can I usually do after the operation?

- most normal non-strenuous daily activities
- walking (be careful on the stairs)
- watching television
- reading
- move around the house and bend carefully
- wear sunglasses outside in windy weather and/or bright sunlight
- sexual relations should be limited to a kiss and a cuddle until the eye is healed

What should I avoid after the operation?

For at least four weeks after the operation please avoid:

- rubbing your eye.
- any vigorous activity including contact sports, squash, badminton, swimming, gardening, vacuum cleaning, hot tub, whirlpool.
- pilates or similar exercises that include inversion (any exercises where your legs are over your head or your head points downwards).
- high-resistance wind instruments, weightlifting and breath holding
- diving for four weeks after the operation or until the eye has settled, whichever is later. Before starting to drive please confirm with the surgeon that your eye pressure has stabilised. You should be able to read the new style car number plate at 20 metres and your eye should be comfortable.
- eye make-up
- splashing water into the eye (please shower from the neck down)
- back-wash your hair for the first week; this is to avoid getting soap or shampoo in the eye)
- dusty atmospheres

When can I go back to work?

Normally, someone working in an office environment would require 2 weeks off, if there are no complications. If your job involves heavy manual work, or work in a dusty environment, you may require four weeks or more before you go back to work (e.g. construction workers, farmers).

This will depend on number of factors and patients are advised individually.

Can I travel abroad after the operation?

Going on an aircraft after a few weeks can be safe but this depends on how your eye recovers after the operation and advice is given individually. It would be preferable not to travel abroad until things have stabilised in case this leads to a complication.

Please make sure you are available for regular follow up for at least 6 weeks after the surgery.

Can I wear contact lens wear after surgery?

It may be possible to restart contact lens wear around 6 weeks after surgery. Not everyone can continue to wear contact lenses after this surgery, so this is something to consider before having the operation.

When do I need to contact the hospital?

Contact the hospital or eye casualty urgently if:

- your eye becomes more painful or red than it was on the day you went home
- your eye develops a sticky discharge
- your lids start to swell
- your vision begins to deteriorate

Contact information

Any queries about information in this leaflet please contact:

Mr Atul Bansal (Consultant with special interest in Glaucoma and Cataract surgery) through Glaucoma secretaries:

Michelle Donnelly: Tel: 024 7696 6502 or

Resha Wilmot, Failsafe Officer/ Glaucoma team: 024 7696 6528

Further information

Royal College of Ophthalmologists

17 Cornwall Terrace, London, NW1 4QW

020 7935 0702

www.rcophth.ac.uk

National Institute for Health and Care Excellence

10 Spring Gardens, London, SW1A 2BU

(0)300 323 0140

Patient Information

Email: nice@nice.org.uk

https://www.nice.org.uk/guidance/ipg397/informationforpublic

International Glaucoma Association

Woodcote House,15 Highpoint Business Village, Ashford, Kent, TN24 8DH
01233 64 81 70

Email: info@iga.org.uk

https://glaucoma.uk

Important disclaimer

The information provided in this information booklet is not a substitute for professional healthcare advice by a qualified eye surgeon, doctor or other healthcare professional. While every step has been taken to compile accurate information and to keep it up to date, its correctness and completeness cannot be guaranteed.

Patients are encouraged to seek further information and or opinion, as they feel necessary, in making decisions about their surgery and not rely solely on the information in this booklet.

The Trust has access to interpreting and translation services. If you need this information in another language or format, please contact us and we will do our best to meet your needs.

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We would like you to tell us what you think about our services. This helps us make further improvements and recognise members of staff who provide a good service.

Have your say. Scan the QR code or visit:
www.uhcw.nhs.uk/feedback

Emergency eye appointments: New booking system

If you have an urgent eye problem, you can now book an on-the-day telephone consultation via the Eye Emergency Referral Service (EERS).

Scan the QR code or visit www.uhcw.nhs.uk and search Eye Emergency Referral Service. You can book a telephone consultation via this link.

You will be spoken to by an expert clinician who will give you specialist advice on the next steps to take.

Please provide a phone number which you can be contacted on for the consultation. Please also be aware that you will be phoned as close to the allotted time as possible, although at busy times unfortunately there may be a delay.

In the event that you feel you cannot wait to speak to someone or do not have online access then you may call 0247 696 4800.

This phone line is open 9am - 1pm; 1.30pm - 5pm (Monday - Friday, excluding bank holidays) and 9am - 12pm (Saturday).

Please only attend the Eye Outpatient department if you have had a telephone consultation in advance and have been advised to attend.

In the event of an eye emergency out of hours, please attend the Minor Injuries Unit/Emergency Department.