

## **Dislocated Intra Ocular Lenses (IOLs)**

I have advised you to read this leaflet because you have a lens that needs to be removed and or replaced or repositioned and I may need to use the technique of Scleral Haptic Fixation (or SHF). Although this is not common surgery, as a VR surgeon, I tend to be referred these cases and so my hope is to explain the surgery in terms of the process, risks and benefits as in many other more common procedures for which much information is available and from many sources. It is very difficult to truly 'evidence base' this advice as these are not common procedures and each is different and so I will use personal outcome data and experience to inform the information.

### **Why do I need my plastic lens (Intra Ocular Lens or IOL) removed?**

After most cataract surgery an IOL is placed into the capsular bag of your natural lens. The most common reason for needing the lens to be removed, replaced or repositioned is because it has moved (Dislocated or subluxed) or the entire bag and lens have moved. It may be dislocated partially or may have fallen to the back of the eye in which case you will have noticed this quite suddenly as a blurring of your vision. If the lens is slowly dislocating you may have become aware of double vision or outlines in your vision through a single eye.

### **Why has my lens dislocated?**

You may have had uncomplicated surgery years ago; your new plastic lens was sitting inside the capsular bag and you could see well. Over time, the support for the capsular bag has weakened and as a result the capsular bag and lens have slipped to the side and possibly even fallen backwards into the eye. As a result, you cannot see. You may have had complicated surgery and the lens was placed in a location other than in the capsular bag and it has now slipped out of position and you cannot see. This movement can happen over days or even years.

### **What if I do nothing?**

If the lens has partially slipped and you are getting double vision you may have to patch the eye. If the lens dislocation progresses and slips away from the centre then your vision will become very blurred. You will only see if you can tolerate a contact lens, spectacle lenses will not work as the difference between the two eyes is so great that your brain will not be able to put the two images together as they will be very different sizes. If you are short-sighted your spectacle lens makes the world smaller and if you are long-sighted the world will be bigger. The spectacle lens to correct the eye with the slipped lens will need to be extremely powerful and will make the world much bigger such that the image sizes between the two eyes will be too great for the brain to put one image on top of the other. This size difference is not an issue with a contact lens. It is a risk that a lens moving around inside the eye could result in a retinal tear and a retinal detachment although I rarely, if ever, see this.

## **What is the aim of surgery?**

To reposition the lens within the eye (if dislocated) or remove the lens from within the eye and replace it (if the capsular bag or lens is damaged). The aim is to restore distance vision (or near vision) without spectacles.

## **Removal and replacement: How is surgery done to remove an IOL?**

Surgery is under local anaesthetic as day case surgery. It will be comfortable and you will see and feel nothing. Surgery can take around 30 minutes but sometimes over an hour to complete. It is 'Off Piste' surgery and I have to respond to how the eye behaves in each case as each case presents slightly different scenarios and challenges. You will lay flat as you did for your cataract surgery. Your eye will be numbed with an injection by my anaesthetist or by myself and you may or may not wish to have some sedation to reduce anxiety. In the private sector I will have an anaesthetist present, in the NHS I may not.

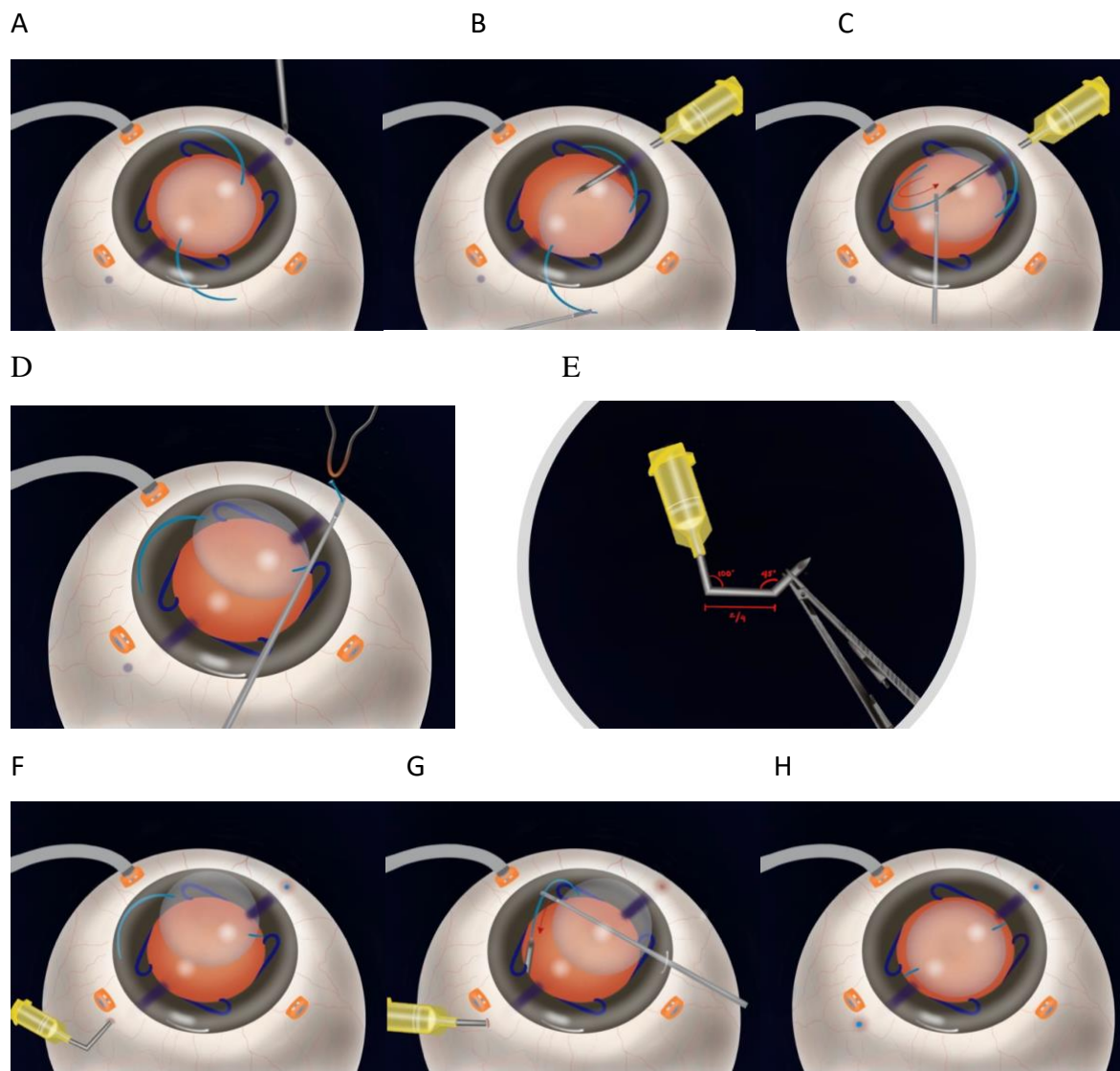
The eye is full of jelly and this is attached to the retina at the very edge. As a result, any movements within the eye can pull on the jelly and cause a tear on the retina. The retina is the 'film in the camera' of your eye, it is the 'wallpaper' on the wall, and if it gets damaged and torn it can come off the wall of the eye- a retinal detachment and this can result in loss of sight. Because of this risk the first thing I will do is place three little ports into the wall of the eye through which I will work. I am then able to remove the jelly from your eye (Vitrectomy) reducing the risk of damage. The procedure itself has a risk of retinal detachment at around 2 in 100 but this is much less than the risk of not doing vitrectomy. Once the jelly is removed I will search around the retina to look for any tears and repair them if found. Videos are available at [www.stephenlasheyesurgery.com](http://www.stephenlasheyesurgery.com).

With the jelly removed I am now able to retrieve then lens either from the back of the eye, if it has fallen, or from its dislocated position. If the lens is a type of lens I can use again (a three-piece lens) I will clean it up and reposition it using a technique called scleral haptic fixation (SHF). If it cannot be used again I will remove it from the eye. This is achieved by cutting the lens into two pieces and then removing each piece through an incision in the cornea- the clear part of your eye. Any wounds I make in the eye can change its shape slightly and the resulting astigmatism will change your prescription hence it can be very difficult to achieve good unaided vision- you will almost certainly need spectacles to get the best vision out of the eye. As in normal cataract surgery the power of the lens is calculated using the length of the eye and the curve of the eye and then a calculation is made to determine the lens power. Just as in normal cataract surgery it is impossible to determine the exact power of the lens when it sits in the eye but the aim will be good distance vision erring on the side of a short-sighted outcome. Sometimes there is enough capsular bag which is strong enough to support a new lens and I will place the lens in the Sulcus and if at all possible trap the optic of the lens in the bag (Optic capture). This gives an 'in the bag lens' which is unlikely to dislocate as it is trapped in the bag. However, frequently the bag is damaged from previous complicated surgery or weakened and unable to support a new lens and in this scenario, I use a technique called scleral haptic fixation (SHF)- the 'arms' of the lens are placed into the white of the eye and secured.

## Scleral Haptic fixation (SHF) Used when no support available for new lens.

The lens is introduced into the eye with the trailing haptic left outside the eye (The haptic is the blue arm in the diagram). I then use a needle from the outside of the eye tunnelled through the white of the eye and into the front of the eye. The Haptic is then grasped and fed into the needle. The needle is withdrawn and the end of the haptic is burned to form a bulb so it does not fall back into the eye. The same is repeated on the other side and then both Haptics are pushed into the tunnels and the lens centres. Full details and a video can be found on my website [www.stephenlasheyesurgery.com](http://www.stephenlasheyesurgery.com) under treatments/lenses/Scleral Haptic fixation.

### Schematic Illustration of SHF



**Fig 2. Schematic Illustration of the surgical technique.**

(A: First needle entry, B: Trailing haptic grabbed outside the eye, C: Trailing haptic threading into the 1<sup>st</sup> needle, D: Trailing haptic flange creation, E: 2<sup>nd</sup> needle Double-Bend, F: 2<sup>nd</sup> needle entry at the 2 o'clock position, G: Leading haptic threading into the 2<sup>nd</sup> needle, H: Both haptics buried and IOL centered in position.)

### **Are there alternative methods?**

Yes, many, and I have used most of them in the past. Over the years the most common method would be to place a large lens into the front of the eye- an Anterior chamber lens. These work well but require a large corneal incision and as they sit in front of the coloured part of the eye and so they can cause problems with the cornea (the clear part) in terms of becoming waterlogged and hazy and they can also interfere with drainage of the eye resulting in glaucoma. These lenses need to be special ordered. The other type of lens is an iris clip lens. These lenses clip to the iris and can cause inflammation at the back of the eye and again have to be special ordered. I like scleral haptic fixation because I can use lenses we have in stock and the lens sits in the eye behind the iris and in the plane of the natural lens.

### **What can go wrong with SHF?**

At the time of writing I have completed over 150 cases with an audit of my first 50 cases completed by an independent source and being prepared for publication. This is a new technique as an adaptation to similar techniques that have been around for many years. Like any technique there is a learning curve and so the figures I will give are from the first 50 cases. The complications are certainly getting less with time and I will be looking to reaudit the work going forward. Being based on the first 50 cases these figures would represent a 'worst-case scenario' as the technique has improved in my hands.

As with any surgery there is a small risk of infection at around 1 in 1000. Vitrectomy surgery carries a 1-2 in 100 risk of retinal detachment. The most common issue encountered is astigmatism or odd shape of the eye. This is usually due to the corneal incision made to remove and replace lenses but can also be due to slight tilting of the lens. It is more likely you will need spectacles to achieve your best vision than with standard cataract surgery. Swelling of the macula (Cystoid macular Oedema or CMO) which is present in around 2 in 100 people in standard cataract surgery is a little more common with SHF at around 10 in 100 although at 6 months only 2 had persistent CMO. Raised pressure has been seen in around 2 in 100 patients and low pressure in 2 in 100 although all settled with drops. Bleeding into the eye was seen in around 6 in 100 and all settled without intervention and capture of the iris behind the lens was seen in 6% and this was treated with a laser procedure to the iris. I have not had a single case of iris capture in the last 50 cases as I have moved the distance of the lens backwards. Two patients in the total 150 cases have required corneal surgery to treat corneal swelling. The risk of this goes up with every surgery performed on an eye as cells are lost from the back surface after each surgery and cells are also lost year on year as we age regardless of surgery. 1 lens was replaced due to decentration and tilt and one lens required refixing a haptic due to slip.

The case mix was complex with nearly half of the patients having other problems with their eyes but vision improved on average 5 lines. I will continue to audit results and update the risks accordingly.

